The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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NOTICES.—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Chemistry at Wembley

THOUGH this issue concludes our series of special numbers relating to the chemical exhibits at the British Empire Exhibition, we shall, from time to time, endeavour to keep our readers in touch with developments there and to give occasional notices of exhibits outside the chemical section which are of practical though indirect interest to the chemical industry. The Chemical Section is now on the point of being completed and visitors who attend during the next week or so will readily agree with us that those responsible for the organisation are to be congratulated on the excellent results produced by their hard and competent work. The exhibitors themselves, too, are entitled to acknowledgment for the public spirit which has led them to undertake both the expense and the trouble of demonstrating to our overseas visitors the comprehensive range of British chemical industry to-day, and especially the strides which have been made within the last ten years. The return to these firms may not be immediate, but ultimately, we think, work of this kind is sure to bring its reward in the collective advertisement of the products of chemical industry and chemical engineering and the enhanced reputation which chemical products are sure to acquire.

From the purely commercial side the exhibit is thoroughly impressive. But business is not the only interest involved. The Scientific Section, which is in the midst of the industrial exhibits, appropriately illustrates how chemical science is at the basis of all progress in chemical industry. This section is so good that its value may easily be missed on a first or second visit, and we venture to predict that as the character of the exhibits becomes better known there will be a succession of visits from students of the most serious class. This educational aspect of the Exhibition is further represented by the chemical publications which are now being issued and which will complete the effect and supply a memorial of one of the largest collective efforts ever made by British chemical industry.

A Book Not to be Missed

THE important work, *Chemistry in the Twentieth Century*, which is issued this week by Ernest Benn, Ltd. (pp. 281, 15s.) justifies all the favourable forecasts published respecting it. Described as "an account of the achievement and the present state of knowledge in chemical industry," it has been prepared under the guidance of a committee representing the scientific societies with Dr. E. F. Armstrong, F.R.S., as chairman and editor, and 29 well-known scientists contribute monographs dealing with the branches of chemistry with which they are specially concerned. A brief preface, signed "W. J. U. W.", explains that the aim of the volume is to present a statement of the present position of chemical science in Great Britain as illustrated by the exhibits in the Chemical Hall at the British Empire Exhibition. The committee has kept in mind the enormous expansion of the science during the past decade and the consequent specialisation which has taken place in its various branches. To such an extent has this developed that the technicalities of one branch are sometimes unknown to workers in other branches. The volume, however, is designed for reading by all who have received or are receiving a training in science, and the writers have tried to keep this object in view. "The story," it is added, "is a record of achievement which in friendly rivalry challenges comparison with similar work done in other parts of the world and in Great Britain in decades gone by. It is offered as a contribution made by British men of science to the work of building up the Empire, which is commemorated more fully in the whole exhibition itself." Without going into detail at this stage, it may be said that the work promises to be the most enduring memorial of the chemical exhibit at the Exhibition, and as a summary of the position of chemical science in this country in 1924 it will have a quite uncommon historical interest and value. It is a work no chemist who takes his science seriously can afford to miss.

Simultaneously with the appearance of this volume

the same firm are publishing a series of "Chemical Industry Pamphlets" at 6d. each, written in a more popular style, but with authority, for the use of the public. The volumes already out—*Chemists and their Work*, by Dr. Stephen Miall, and *Wood Products*, by T. W. Jones, B.Sc.—promise well, and they are to be followed shortly by others including *The Quest for Colour*, by Dr. A. T. de Mouilpied; *The Fermentation Industries*, by Rex Furness: *Fine Chemicals*, by T. W. Jones, B.Sc.; *The Heavy Chemical Industry*, by Rex Furness; *Chemistry in the Manufacture of Pigments, Paints and Varnishes*, by C. A. Klein, M.Sc., and *Foodstuffs*, by Dr. G. W. Monier-Williams. Quite a little chemical library in itself for rather less than five shillings!

Industrial Disputes and Trade

THE rapid succession of industrial disputes which have characterised the opening quarter of this year may tend to assume an importance quite out of proportion to their actual significance, unless regarded from the standpoint of industry as a whole. The position of affairs is, fortunately, not so gloomy as at first thought may be imagined, since although, during the post-war period, 1,015 stoppages of work have occurred annually in the United Kingdom, resulting in a total of 35,500,000 lost working days each year. The magnitude of this latter figure is minimised considerably if the fact is borne in mind that when spread over our industrial population of 11½ millions—the number engaged in insured occupations—the average loss per head approximates only three working days per annum—or rather less than the annual absence through sickness. Moreover, statistics show that throughout the whole period of recorded British industrial disputes, quite 70 per cent. of these are confined to a relatively small group of trades, comprising mining, heavy engineering, shipbuilding, transport and building, and that, therefore, all other industries taken together do not produce one-third of the total disturbances. From the point of view of lost working days, the trades mentioned are also responsible for at least 75 per cent. of the yearly aggregate for all industry, but, even so, some three-quarters of their 4,200,000 workers are normally not involved in the disputes—sufficient demonstration that industrial harmony is more in evidence than is generally supposed. The bulk of work-people pursue their vocations so peacefully as to be obscured by the 6 per cent. who have actively engaged in stoppages. Further inquiry reveals that even in the case of the latter the majority of disputes in recent years have originated, not from conditions of employment, but from attempts to keep pace with continuous fluctuations in money values—a cause which is not fundamentally industrial!

An Opportunity for Argument

THE correspondence which has lately appeared in our columns in connection with the utilisation of hand-charged or mechanical burners for the treatment of sulphur-bearing ores and other materials serves to emphasise the differences of opinion which must always be found in the everyday experiences of practical men. It is in the ventilation of experiences of the kind that the technical journal which reaches the man on the works proves, perhaps, most valuable, for it is seldom that the onlooker fails to find in a discussion of this sort some helpful point which had not previously occurred to him. Mr. Parrish, who from his earliest days at Dewsbury, has grown up among and wrestled with almost every conceivable problem which could present itself to the manager of a sulphuric acid works, has by this very practical knowledge, leavened with an equally thorough grip of theoretical principles, gained the ear of the extremely large chemical public which finds itself associated in one way or another with what is undoubtedly the most important of chemical substances. He has given many of us seriously to think by reason of the fact that he has recently expressed a preference for the time-honoured hand-charged burner as opposed to the modern labour-saving mechanically operated furnace. It is important to bear in mind that Mr. Parrish bases his preference merely on his own observations with spent oxide of iron, and we rather gather that his views might be considerably modified were he to express an opinion in connection with the treatment of sulphur or pyritic and zinc ores. It is the physical condition of spent oxide as compared with the other materials which alone introduces considerations which lead one to hesitate before abandoning the shelf burner for some self-operating device, and we believe we remember Mr. Parrish stating that on one occasion he removed on an average 100 tons of dust a year from a dust-chamber which was working in conjunction with a twenty-ton mechanical burner. The great value of Mr. Parrish's expression of opinion lies in the fact that it might well prove a starting-point for an extremely profitable argument, and we should be glad to publish further views on the subject.

Budget Concessions

THE first Labour Budget, though, like every Budget, it falls short of our ultimate desires, has given general satisfaction. We are inclined to think it is an honest Budget, designed to distribute the relief as fairly as possible. The abolition of the Corporation Profits Tax, reduced last year from 1s. to 6d., is a direct benefit to industry; so are the substantial telephone concessions and in a slighter degree the new arrangements for motor licences. Though Income Tax remains unchanged, that obnoxious little item "Inhabited House Duty" disappears and no one will dare to restore it. The relief on tea, sugar, coffee, cocoa, chicory, and dried fruits benefits everybody, and the reduction or abolition of entertainment tax will be almost equally general in its application. Much opposition has been offered to the repeal of the McKenna duties on kinema films, clocks and watches, motor-cars and motor-cycles, and musical instruments, but the fact that only these industries benefit under the Act shows that industry generally is not heavily affected, and in any case it rests with the industries concerned to make out their own case. No new taxes are proposed, nor is there any addition to direct taxation. Among business people and the public generally Mr. Snowden's Budget will be received with relief.

British Oils and Fats

A VERY definite idea of the enormous and ever-growing importance of the oils and fats industry is the first impression gained from a glance at Volume IX in the Resources of the Empire Series, which deals with "Oils, Fats, Waxes, and Resins" (Ernest Benn, Ltd., pp. 275, 21s.). The work, just published, has been written jointly by Mr. E. Richards Bolton, F.I.C., and Mr. Russell G. Pelly, F.I.C., with a special section on mineral lubricating oils by Mr. Harold Moore. The treatment is very comprehensive and thorough, and the authors have obviously been at great pains to compress within practicable dimensions a trustworthy review of the industry in all its aspects throughout the world. Mr. J. H. Batty (Chairman of the African and Eastern Trade Corporation), in an introductory review, draws attention to the importance of developing the resources within the Empire, more particularly in oil seeds, copra, and such-like products, the resultant oils of which can be used for edible purposes. In reference to the industry of seed crushing he notes that during the war, as it was not possible to find an outlet in Germany for palm kernels and ground nuts, these products came to this country, with the result that, at the present time, about 200,000 tons of palm kernels and 100,000 tons of ground nuts are crushed here. During the past twenty-five years supplies of vegetable oils used for edible purposes have increased over 50 per cent., against an increase in the population of about 30 per cent., thus indicating, in the writer's view, that vegetable oils are steadily replacing butter, and that the increase in the future will be mainly in the use of vegetable margarine. The collection and co-ordination of the large mass of information necessary for the compilation of this book have given even to the authors a new aspect of several questions and brought to light various unsuspected features in the trade of the Empire in oil seeds and their products. The result is a volume which is in itself a compressed library on the subject, and contains a body of orderly information which cannot fail to be of great value to the industry.

Fertilisers and Soil Acidity

THE present-day intensive study of the practical efficiency of all forms of fertilisers, and particularly those of a nitrogenous character, is beginning to bring us nearer an understanding of the relative value of nitrogen derived from different sources. It has been said that only by the accumulation of fairly exact knowledge of the kind will it be possible to establish a more or less direct relation between the agricultural and commercial values of nitrogenous plant foods. Extensive experiments covering a period of more than fifty years have shown clearly that very marked differences exist in the efficiency, or so-called availability, of nitrogen in soils and fertilisers, the differences in question being attributed to the nature of the materials themselves, to the character of the soil on which they are used, to the climatic and seasonal conditions, and to the crops in connection with which they are employed. Other things being equal, it is found that the greater the rainfall and the more open the soil the greater is the amount of nitrogen lost.

Two workers, Messrs. J. G. Lipman and A. W. Blair, of the New Jersey Experiment Station, have lately given some interesting facts relating to a series of experiments which have been undertaken for the purpose of studying certain phases of the nitrogen problem as related to crop production, and not the least important of their conclusions is contained in the statement that the continued use of sulphate of ammonia without the periodical application of lime may result in the soil becoming so acid as practically to inhibit growth. We are, in fact, told that soils which had been receiving sulphate of ammonia at the rate of approximately 240 pounds per acre each year became so acid as to permit of scarcely any growth; but, on the other hand, corresponding soils which received regular applications of ground limestone once in five years maintained their production at a fairly high level. The point raised is one of considerable importance for the reason that if improperly made use of or emphasised it might lead to wrong impressions with regard to the value of sulphate of ammonia. The majority know, of course, that this fertiliser is, as contrasted with nitrate of soda, inclined towards an acid nature, and that it may leave in the soil an acid residue which may in some cases tend to cause or accentuate sourness. One has to bear in mind, however, that quite a number of crops—*e.g.*, rice and the potato, actually do better under moderately acid conditions, and that sulphate of ammonia plays a leading part in rendering the iron more available. The work of Messrs. Lipman and Blair must not, therefore, be regarded as condemnatory so far as sulphate is concerned, but merely as a valuable indication of the manner in which the material may be supplemented and employed in those cases where in the past it may have been considered unsuitable.

Points from Our News Pages

The Chemical Section at the Wembley Exhibition is very nearly complete, and descriptions of the remainder of the stands with a few unavoidable exceptions, where work has been delayed, are given (p. 458).

The British Industries Fair opened at the White City, London, on Monday and contains several items of chemical interest (p. 464).

Reviews of some recent books appear (p. 465).

According to our London Market Report there has been rather more activity during the past week (p. 472.)

The Scottish chemical market remains quiet with inquiry for small quantities only (p. 475).

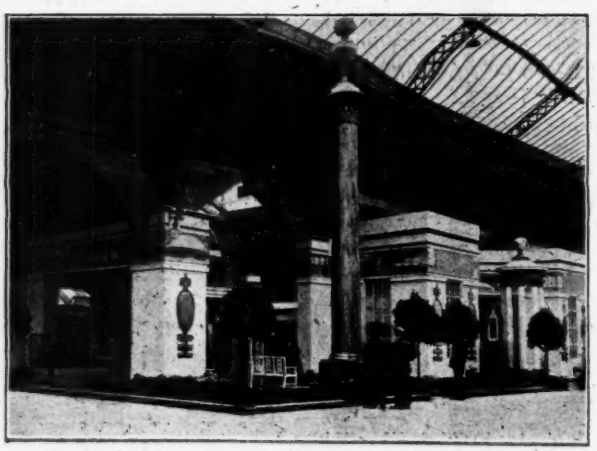
The Calendar

Apl. 28–May 9	British Industries Fair	White City, London.
5	Society of Chemical Industry (London Section): Ordinary Meeting. 8 p.m.	Burlington House, Piccadilly, London.
5	Institution of the Rubber Industry: "The Rubber Industry—a Plea for Close Working." James Fairbairn. 8 p.m.	Engineers' Club, Coventry Street, London, W.
6	Northern Polytechnic Chemical Association: "The Organisation of Research in a Chemical Works." Dr. H. A. D. Jowett. 8 p.m.	Holloway, London, N.
7	Society of Public Analysts: Papers J. H. Lane, L. Eynon, J. J. Considene, K. A. Williams, E. R. Bolton, and others. 8 p.m.	Burlington House, Piccadilly, London, W.
8-9	Iron and Steel Institute Annual Meeting	London

Chemistry at the British Empire Exhibition

Further Notes on the Exhibits

A WEEK has made a wonderful difference since the opening day at Wembley. Although the British workman remains obtrusively in evidence, and the roads are still in the rough, and constructional work is still proceeding in many quarters, the main outlines of the great plan are beginning to emerge out of the *débris*, and in less than a month the picture should be perfect. Already one can foresee something of what Wembley will ultimately look like. From the



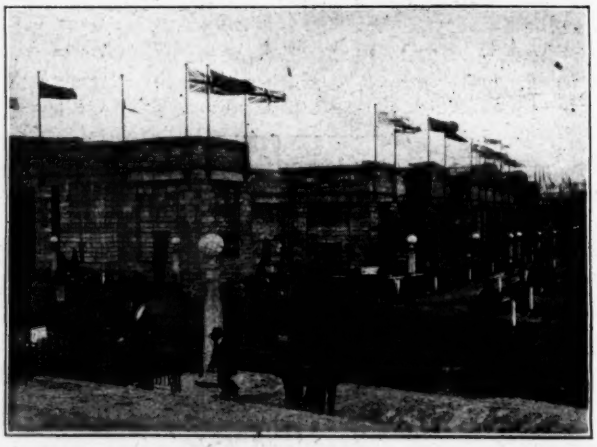
A GLIMPSE OF THE CHEMICAL SECTION.

Wembley Park side, the large enclosed garden facing the entrance is beginning to turn refreshingly green under the spring rain, and when the beds of tall tulips burst into bloom in another week or two, and the trees put out their foliage the view from the entrance promises to be one of real beauty. The train services are excellent from almost every direction, and though there is no inconvenient crush there is a steady stream of visitors which continues throughout the day. Complaints and criticisms about matters of detail are rather numerous, but the outside Press, which discovered Wembley and taught the authorities how to make a great enterprise properly known, is taking these in hand one by one, and will presently get things straight.

The Chemical Section, now rapidly approaching completion, looks better and better as the barrows and boards and ladders disappear, and the cheerful sounds of saw and hammer pass away. Most of the stands are now finished. There are, perhaps, a dozen or so yet in various stages of incompleteness, and as some of these are important exhibits their present condition rather interferes with the general effect. One cannot, for example, gaze admiringly at a finished exhibit while one is dodging a youth carelessly swinging his paint pots, nor is it possible to attend single-mindedly to the theme of the frieze while exposed to the risk of colliding with a barrow. These little delays are, however, gradually being overtaken, and well within a fortnight, one may safely predict, every chemical stand will be finished. The final effect, it may be as confidently said, will be wholly good. The warm and blending colours of the frieze look very well above the white walls, and the colours of the stands themselves, the brilliant hues of many of the chemical products, and the rich fabrics illustrating the uses of British dyes combine to give a general brilliance to the whole exhibit. As far as one can judge from the present stage the effect will be bright and yet dignified, varied and yet unified, and as a whole decidedly distinctive. It was impossible to have any formal ceremony on the official opening day, but it may be permissible to suggest that when the section is complete an opening ceremony of some kind may not be out of place.

The principal of the unfinished stands on Tuesday was that of the British Dyestuffs Corporation, which meets the eye at once on entering through the Weft Gate. Here the workmen were busy at work, and already the elaborately designed symbolical scheme of decoration is falling into shape. The exhibit, when finished, cannot fail to be striking. At other stands, notably those of the British Alizarine Co. and Scottish Dyes, Ltd., the richly coloured fabrics on view were attracting considerable attention. Other stands on which work was still proceeding were those of Thos. Tyrer and Sons, Ltd., Sheffield, J. C. Oxley's Dyes and Chemicals, Ltd., Colne Vale Dye and Chemical Co., Ltd., Carnegie Brothers, T. and H. Smith, J. F. Macfarlan and Co., and a few others.

Already the Chemical Section has been well patronised by visitors. The schoolboy class are distinctly interested in the stands in the Science Section; students of technical institutions form a good proportion of the visitors, and there has been a steady flow of chemical people proper since the opening day. The stands which deal in retail articles—soaps, perfumes, scents and other fancy products—are selling freely to the public. One heard of one firm taking between £30 and £40 for such articles between 12 and 4 o'clock on the opening day. The general aim, however, is not business of this description, but an impressive demonstration of the resources of British chemical industry as a whole—as one spectator put it, "a mass-action demonstration which is bound to impress not only our people at home but our thousands of overseas visitors."



PALACE OF INDUSTRY, IN WHICH THE CHEMICAL SECTION IS HOUSED.

The Scientific Section steadily improves on closer acquaintance, and promises to wear well. On a first inspection it is difficult to realise all that these modest stands signify in the way of scientific history and it will probably be found that serious students will be tempted to visit the section again and again for a more intensive examination of its fascinating exhibits. The general idea was that each exhibit should be self-explanatory, that is, that not only the expert but the layman of ordinary intelligence should be able, from the printed notes and

the progressive order of the exhibits, to see the general meaning for himself. Naturally, the idea has been more perfectly attained in some exhibits than in others. That relating to crystals, for example, strikes one as almost ideal, and there are others nearly as good. There is, however, no imperative rule against illustrative talks or lecturettes, and there is such a wealth of material in the section that possibly something of this kind may later be arranged for special parties or occasions.

The organisation by the Exhibition authorities still leaves a good deal to be desired in several directions. The publicity arrangements, as we stated last week, have shown not merely a want of enterprise but a lack of intelligent appreciation of the more serious aspects and purposes of the Exhibition. The Post Office, too, usually so good at meeting special demands, has fallen distinctly below the traditions of the service. On Tuesday we saw three mail bags, containing postal matter addressed and stamped for delivery to the individual stalls, lying in a heap under one of the stands—left there, apparently, to be delivered by benevolent private enterprise, or never to be delivered at all so far as the Post Office is concerned. This is a practice which someone in authority should be able to deal with. Another point is the lack of power throughout the Chemical Section. Many of the exhibitors have installed working models illustrating chemical plant operations, but so far it has been impossible to put these in motion for the want of power. When this is available the interest of many of the exhibits will be appreciably increased.

We are glad to publish the following letter which has been received from Mr. W. J. U. Woolcock, the general organiser of the Chemical Section :—

To the Editor of THE CHEMICAL AGE.

SIR,—The Exhibition at Wembley now being open, will you permit me to tender to you my most hearty thanks for the assistance you have given in connection with the remarkable display representing British Chemical Industry and British Science in the Chemical Hall.

I am very sensible of the many excellent suggestions which have been made by the technical Press : most of them we have been able to follow greatly to the benefit of the display. The publicity which has been so freely given by the papers has, I think, been better than ever before, and this is entirely due to the meetings of the editors which have taken place. The value of the co-operation among manufacturers in chemical industry has been self-evident, and I feel that the coming together of the representatives of all the technical journals has not only been of great assistance to the Exhibition, but I trust is only another example of a further form of co-operation which cannot fail to be beneficial to your readers, and I trust not unwelcome to yourselves.—Yours, etc.

W. J. U. WOOLCOCK.
General Manager.

The Association of
British Chemical Manufacturers,
166, Piccadilly, W.I.
April 26.

The editors to whom this has been addressed will, we are sure, share our own satisfaction at any help they may have been able to give, and they will be equally anxious to acknowledge the invariable courtesy and practical help they have received from Mr. Woolcock himself and from his competent and obliging secretary, Miss Small. Here, at any rate, one can say that the meaning of publicity is properly understood.

These notes may well conclude with an announcement which, though not official, we believe to be well-founded—namely, that Mr. Woolcock has been nominated by the Council of the Society of Chemical Industry as the President for next year.

Further Chemical Exhibits

Ajax Aniline Dye Manufacturing Co., Ltd.

The exhibit of the Ajax Aniline Dye Manufacturing Co. consists of a good selection of dyed samples showing the firm's colours on all kinds of material, and also a case showing bottles of actual dyestuffs and intermediates. Special attention is drawn to a range of dyes for the leather trade, to which branch considerable attention has been paid. The colours for such materials as artificial silk, carpet yarns, etc., are also well worth seeing.

Albright and Wilson, Ltd.

The stand of Albright and Wilson contains principally some fine samples of compounds of phosphorous, thus phosphoric acid, phosphorous pentoxide, acid calcium phosphate, tri-calcium phosphate, and ammonium phosphate may be seen in various forms, while another important compound that is on view is sodium glycerophosphate. If it should be thought that the firm produces phosphorous compounds only, a number of samples of other chemicals which are shown in the glass case which forms the company's exhibit will dispel that idea. Thus there is to be seen ammonium sulphate in a purified form, and ammonium persulphate, while other samples which may be mentioned are powdered sulphur and carbon tetrachloride.

Stafford Allen and Sons, Ltd.

This firm, the growth of whose business from a small oil-milling concern established in 1833 forms one of the romances of the British chemical industry has an effective corner stand on the borders of the Scientific Section. The name of Allen's English Almond Oil has been known for very many years all over the world, and in one of the cases is a display of the almonds used in the pressing of the oil. The peach and apricot kernels used to make persic oil, which was at one time imported as foreign almond oil, are also on view, and also the residual cake from the presses. The cake is then used to obtain the essential oil of bitter almonds by treatment with water, followed by distillation. As the processes of pressing and distillation are of fundamental importance in the production of the firm's specialities, it is appropriate that a press capable of exerting 200 tons pressure is on view, and also a still which will be actually working.

There is a central case showing essential oils distilled at Long Melford, Suffolk, and also a number of terpeneless essential oils. A third case shows scale preparations of some flavouring essences, and isolates from essential oils such as eugenol, anethol, etc. Another case shows samples of oleo resins, resins of scammony and julep, thymol, anethol and other products, while on the back wall of the stand there are a number of photographs showing the fields at Long Melford, where many of the plants used for the medical extracts are actually cultivated under the supervision of the firm.

J. and E. Atkinson, Ltd.

This firm is showing a good selection of perfumes, eau de Cologne, bath soaps, toilet creams, and other paraphernalia essential to the modern apothecary's store.

Baird and Tatlock, Ltd.

Baird and Tatlock is a name well known to most chemists many of whom are accustomed to order any odd sundry that may be required in the laboratory from the firm bearing this name. The stand in the chemical section contains, as might be expected, a very representative selection of what may be best described comprehensively as laboratory requisites. Thus there are chemicals of various kinds, acids, crystalline salts, organic bodies, etc. ; in addition there are the " sundries," such as retort stands, air ovens, small furnaces, thermometers, crucibles, glassware both plain and elaborate, and many other items too numerous to mention. The whole exhibit gives the impression it is intended to convey, namely, that there is nothing for the laboratory that the firm cannot supply.

F. W. Berk and Co., Ltd.

The principal exhibits of F. W. Berk and Co. are the heavy chemicals manufactured at their works at Stratford, London, and at Pentrepoth, Swansea. First among these are hydrochloric acid, nitric acid and sulphuric acid, which are supplied

in various grades for different uses. In addition, mercury and potash salts may be mentioned, and also hydrogen peroxide, while the company also specialise in alkaloids, mercurials and many crude drugs. In addition to manufacturing, the firm has developed the trading side of their business to a very great extent, particularly for export purposes, and a feature of the exhibit is a display of the methods of packing employed for shipping chemicals overseas. It may be mentioned that the heads of many of the firm's departments have had an experience up to forty years in some cases, so that the firm's slogan to "Ask Berk" is soundly based.

A. Boake Roberts and Co., Ltd.

Boake Roberts have a corner wall-space in which they are exhibiting a good selection of their products. There is a large ball of crystals of potassium metabisulphite about 18 in. across in a prominent position in one of the cases, while another case contains crystals of sodium sulphite, sodium bisulphite, and recrystallised menthol B.P. A case at the back of the stand contains samples of various sulphites and phosphates, acetic acid and acetates, and various organic chemicals such as esters, paraldehyde, eugenol and iso-eugenol, rhodinol, iso-butyl alcohol, terpeneless oils, cinnamic aldehyde, fruit extracts and essences, and numerous essential oils. SO_2 is shown in liquid form in "syphons," and there are examples of cylinders used for storage and handling of large quantities.

J. C. Bottomley and Emerson, Ltd.

This firm of dyestuff makers are showing typical specimens of dyes grouped according to the purposes for which they are produced. Thus there are dyes for wool, leather, paper, and jute, direct cotton colours, and union colours. The arrangement is effective as it brings clearly before the visitor the need not often realised by the general public of producing different types of dyes for dyeing different classes of material. In addition to the dyes there are a number of chemicals to be seen on the stand, which are of such widely different kinds as nitric acid, phenyl hydrazine sulphonic acid, and salt cake. The meta-chrome mordant used in connection with some of the dyes is also shown.

The British Alizarine Co., Ltd.

The British Alizarine Co. have a fine stand on which are displayed the firm's well-known artificial alizarine dyes, which replace the old-fashioned dyes obtained from the madder root. A number of dyed fabrics are shown, in striking colours such as appeal to oriental buyers, and in some cases garments of this nature will be found appropriately draped on dummies of African ladies. The new alizanthrene vat colours are displayed, which are of course made throughout by the firm, and are identical chemically with the German indanthrene dyes. There is also a very well carried out series of dishes showing some dozen intermediate stages in the product of alizarine dyes through anthracene in various stages of purification from coal itself.

The British Cyanides Co., Ltd.

The compounds produced by this company lend themselves to effective display as crystals, and advantage is taken of this fact in the arrangement of the contents of the case containing the firm's exhibit, where the yellow and orange colours of the prussiates and ferricyanides make a prominent feature which catches the eye of the visitor while he is yet some distance away. The crystals shown in this way are the prussiates or ferrocyanides of soda and potash while other substances shown as bottled specimens are potassium ferricyanide, potassium permanganate, and single and double cyanide salts.

Bryant and May, Ltd.

An effective timbered cottage appears as the stand of Bryant and May, Ltd., the well-known match manufacturers, who, in addition to showing modern products, have a unique collection of historical exhibits of fire-making devices. Duplicates of the matches supplied to the Queen's Doll's House are a feature sure to attract public interest.

Burgoyne, Burbidges and Co., Ltd.

The outstanding features of this exhibit are medicinal chemicals and pharmaceutical preparations. Attention is directed to the production of organic medicinal chemicals, especially chloral hydrate, of which the firm are the largest English makers. A scheme is exhibited showing its method of production. Among specimens, typical of the whole range of medicinal chemicals, are sodium salicylate, menthyl valerate, camphor monobromide, chloramine—T, benzoates, and citrates.

Fine chemicals are represented by specimens of acids, aldehydes, alcohols, ketones, anhydrides, nitriles, and amines. These products are of a high standard, and the actual boiling ranges and melting points are on the labels and indicate the standards below which the products do not fall.

Pharmaceutical preparations include numerous examples of tinctures, liquid extracts, syrups, and other galenicals which contain the active medicinal ingredients of crude drugs in a form ready for the dispensing of medicines. Pills, compressed tablets, ampoules, capsules, and suppositories form another sub-section, these products being noted for their accuracy of dosage. Stains and reagents prepared from pure dyestuffs for bacteriological and other work are also shown, together with a complete range of analytical reagents, perfumes and flavouring substances, soluble essences, etc.

Burroughs, Wellcome and Co.

Burroughs, Wellcome and Co. have no less than four separate exhibits. The main exhibit in its design and colour suggests those ideals of purity and quality which are notably associated with "Tabloid" products, with the firm's fine chemicals and medical preparations. This note of quality is repeated in the beautiful display of crystals, and by the original and handsome design of the glassware in which many of the products are shown.

The immense quantity of raw material necessary for the production of the exceptionally pure and highly concentrated "Wellcome" brand insulin hydrochloride and the intricate stages in the production of "Wellcome" brand insulin as issued are very strikingly demonstrated in a special exhibit.

Naturally "Tabloid" medical equipments are given prominence, and the unique position Burroughs, Wellcome and Co. hold in having equipped every expedition of importance since the days of Stanley is well brought out by the display of historical medical equipments, including that carried by Stanley through "Darkest Africa," that carried to the South Pole by Scott, and that carried to the North Pole by Peary. The compactness and portability of these "Tabloid" medicine cases in view of the quantity of their contents is a point which is obvious to the eye, but as a *tour de force*, demonstrating the wonderful skill in manufacture attained by long study and experience, the smallest medicine case in the world with its twelve phials, each containing perfectly compressed "Tabloid" products, will reward attention; it measures but ⅝ in. on its longest side. A duplicate of this triumph of compression will be found in H.M. the Queen's Doll's House in another part of the Exhibition.

The "Wellcome" *Materia Medica* farm has an exhibit to itself, consisting of a most interesting display of living medical plants from the firm's farm at Dartford, together with a collection of herbarium specimens.

"Kepler" malt products are shown in another exhibit attractively arranged and decorated in the Egyptian style, and "Tabloid" photographic chemicals are utilised to make a fourth very striking display of Burroughs, Wellcome and Co.'s activities.

W. J. Bush and Co., Ltd.

Visitors to the exhibits at this firm's two stands will have an opportunity of obtaining an insight into the development of an interesting industry. W. J. Bush and Co. since the Armistice have concentrated their attention on the production of the fine chemicals which find application in essence making, confectionery, the mineral water trade, perfumery, and soap making. In accordance with their policy of business expansion they also manufacture products which are of interest to lacquerers and varnish makers.

At their perfumery stand they show the products of Potter and Moore and Buisson Frères, of which they are the sole proprietors. Potter and Moore's 1749 Mitcham Lavender Water at the present day is firmly established as a favourite English perfume, and in deference to the wishes of their *clientele* they have prepared numerous toilet articles in which this delightful odour is incorporated. It is not within the scope of this notice to describe in detail all the preparations which comprise the exhibit of Potter and Moore and Buisson Frères; suffice it to say that the exhibit must be seen for its beauty and worth to be appreciated.

The Clayton Aniline Co., Ltd.

The Clayton Aniline Co. are exhibiting in four showcases a complete set (about 250) of their colour types; also in two showcases all the intermediate products they are manufacturing (numbering about 100). In a special case they show certain typical colours with the corresponding intermediates, explaining the course of manufacture from raw material to dyestuff, and in various other showcases they demonstrate the application of the various dyestuffs to the different kinds of materials and for the different trades, such as dyeing, printing, leather treatment, painting, etc.

J. M. Collett and Co., Ltd.

This Gloucester firm manufactures a number of useful chemicals derived from sulphurous acid, such as the meta-bisulphites of sodium and potassium, sulphites of lime and soda and the corresponding bisulphites. The bisulphite of soda is shown both in solid and liquid form.

Joseph Crosfield and Sons, Ltd.

An effective pyramid suggesting the trade mark applied to many of the firm's goods surmounts the Crosfield stand. As might be expected a large proportion of the space occupied is used for the display of soap of various kinds for toilet and laundry purposes, but in one corner of the stand there are a number of interesting chemicals which are associated with soap manufacture more or less indirectly. Thus we find silicate of soda has a prominent place, and is shown in various stages of purity in solid and liquid form. Again, glycerin is prominent and may be seen in its crude and refined states. There are also samples of caustic soda in flakes and sticks, and the firm's preparation carbosil is also on view. A new product to be seen at this stand is "Doucil," a water-softening agent of the base-exchanging type, which is a double silicate of sodium and aluminium, having about 40 per cent. of its soda content (calculated as Na_2O) exchangeable for calcium or magnesium. This compound was described by Messrs. T. P. Hilditch and H. J. Wheaton at the conference of Mechanical and Chemical Engineers on February 26 last (see the CHEMICAL AGE, March 1, 1924, p. 215). Samples of the compound and the water-softening plant may be seen on the stand.

James H. Dennis & Co., Ltd.

This firm exhibit sulphate of copper, of which they claim to be the oldest makers in the world. Their mark or brand "Macclesfield" is guaranteed 98 to 99 per cent. purity, and has been supplied for over half a century to the majority of French vine growers, is also used extensively throughout all the vine-producing countries of the world. "Macclesfield" sulphate of copper is supplied in size to meet the requirements of users, in the form of crystals, medium and fine powder form, also dehydrated dust. The uses of sulphate of copper as a preventive of plant disease, especially vine, fruit and potatoes, as a weed killer, for water purification, for curing fishing nets, and as an addition to asphalt for the improvement of road material are illustrated.

W. J. Fraser and Co.

This firm, who specialise in chemical engineering and have a large stand in the chemical section, show a vertical autoclave for 100 lb. per sq. in. working pressure, 575° F. working temperature, heated by hot oil coils, agitated by a gear-driven mechanical paddle, with level gauges, thermometers, etc. There is also a small high pressure autoclave for work at 2,000 lb. per sq. in. in enamelled cast steel, also heated by an oil jacket which in turn is gas heated. Another large piece of industrial apparatus is a horizontal steam jacketed vacuum dryer with worm-driven agitators. In addition the firm display ¼ h.p. electrically driven detachable stirrer which may be readily removed from the vessel where it is in use and fixed to other vessels as works conditions may dictate. A very interesting exhibit is the periodic still for experimental work which is adaptable to an enormously large range of uses.

A complete model of the Mills-Packard sulphuric acid plant for the chamber process is a central feature of the exhibits. Other apparatus shown includes one of the regulus metal valves for acid pipe lines.

D. and W. Gibbs, Ltd.

The greater portion of the space occupied by D. and W. Gibbs, Ltd., is given up to the complete manufacture of toilet soap, utilising normal size machinery and a full staff of workers. This will be in no way a miniature model factory, but actual pieces of machinery picked up and laid down on the floor of the Exhibition. In order that the public may see this properly a gangway has been made through the exhibit from one corridor to another. This will be slightly raised and will allow the visitors to look down into the machines in action. Naturally it is not possible to show the whole process of soap making as this would entail boiling and certain processes which are impossible for exhibition, but the processes of ribbon drying, compressing and perfuming, triple milling, cutting and stamping and wrapping of the final tablets will be shown, as practised in an up-to-date factory.

Graesser-Monsanto Chemical Works, Ltd.

This Ruabon firm has arranged a simple display to demonstrate the production of cresols, ortho cresotinic acid, salicylic acid, through cresylic acid and carbolic acid from coal. The specimens of these products are effectively arranged in bottles and jars on four tiers representing approximately the different stages in manufacture. The finished product acrocresyl, a liquid disinfectant containing 50 per cent. of purified cresols, is displayed in the well-known dark blue bottles. Two small glass cases show samples of the firm's vanillin and saccharin arranged in the form of star-shaped blocks reminiscent of the firm's star trade-mark.

Thomas Hill-Jones, Ltd.

In a small case Thomas Hill-Jones, Ltd., are showing some of their numerous manufactures, including samples of carbon in a multitude of forms, such as activated charcoal, decolorising charcoal, animal charcoal, plumbago, granulated charcoal, etc. Invicta bitumens for road making are demonstrated by a small section of an Invicta grouted road, while there are also a large number of assorted chemicals for agricultural purposes and raw materials, such as copper sulphate, antimony, sodium uranate, calcium silicide, mica, hoof and horn, bone flour, and tomato fertiliser.

Hopkin and Williams, Ltd.

This firm, as manufacturers of a very large range of fine chemicals, are making a special display of their chemical reagents. They claim to be the pioneers in the British Empire of this branch of the fine chemical industry, their book, *Analytical Reagents*, being still a standard work on the subject. They also show a group of uranium compounds for use in the manufacture of pottery, ceramics, and glass. Another group of cerium compounds is of interest to the same trades, and also for the tanning and dyeing industries. A full display is made of thorium salts for the use of incandescent gas lighting.

Howards and Sons, Ltd.

Howards' exhibit is also housed in the same stand, which is reminiscent of an eighteenth century apothecary's shop, and this atmosphere is enhanced by the display of a number of interesting old pharmacy jars among the chemicals shown. The firm have endeavoured to show as many typical examples of their very large range of manufactures as space will permit. These examples are, as far as possible, ranged in groups to facilitate reference. A special feature of the products of Howards' tabletting department is made in the different groups, and there is an interesting separate group showing the stages by which aspirin tablets are evolved from coal. Another group shows the stages by which seidlitz powder is produced from grapes. A particularly interesting group consists of the new synthetic solvents now being manufactured by Howards, comprising isopropyl, alcohol, cyclohexanol, and many others, which are constantly being added to as the result of work in the research laboratory is transferred to large scale working in the factory.

Johnson and Sons (Manufacturing Chemists), Ltd.

The exhibit of Johnson and Sons, manufacturing photographic chemists, of Cross Street, Finsbury, and Hendon, London, shows a complete range of photographic chemicals, including those required for the manufacture of sensitised photographic material, also for the manipulation of plates and papers in the hands of professionals and amateurs, and others that are required for the photo-mechanical process or the process worker. In addition to their own stand, in the

scientific sub-section, the firm are showing the manufacture of photographic developers from coal tar through the primary and secondary intermediates.

The Kalbitum Paint Co., Ltd.

The firm specialise in a black bituminous paint for iron and steel structural work, which is an efficient and economical preservative and used with success for coating metal work in electrical storage battery installations, refrigerating plant, gas holders, boiler fronts, ships' holds, bunkers, steel bridges, etc. It is highly recommended for damp walls. The paint is applied cold, and does not require skilled labour.

The Keystone Varnish Co., Ltd.

The stand is painted and decorated throughout with Keystone specialities. The main exhibit is a large panel decorated in Keystona, a blending of colours showing the beautiful effects and artistic finish obtained in Keystona flat oil paint. Various panels painted with Keystona show ample colour schemes, two coat work, exhibiting the velvety finish and exceptional body of Keystona. Other exhibits include Zinolin zinc paint (patented), which is claimed to be superior in body and covering power to white lead and unaffected by chemical fumes, gases or sea air.

Lever Bros., Ltd.

Lever Bros., Ltd., whose name is famous throughout the civilised world, not only show all their well-known products, but also place much interesting and valuable information regarding the use of numerous soaps, cleansing agents, etc., at the disposal of the public. Experts are present to explain and to guide and advise all who are interested. On the same stand Messrs. R. S. Hudsons will exhibit their products, including the famous Hudson's soap, Rinso, Omo, Longa Life. In the centre of the stand there is a large revolving centrepiece containing photographic illustrations of Port Sunlight, that ideal industry township which is so important a feature of North English life, and so valuable a part of a great industry.

T. Lye and Sons.

Except for the lack of colour, the work of the bleacher lends itself to as effective a display as the work of the dyer. Thus T. Lye and Sons have arranged in the small glass case which forms their exhibit a few common examples of bleached goods, such as a straw panama hat. Some of the substances used are also shown, such as sulphites and bisulphites, and hydrogen peroxide. Phosphates and a few samples of artificial silk are also shown.

The Mond Nickel Co., Ltd.

The Mond Nickel Co. have only a small stand, but it is of great interest because of the remarkable and unique chemical process by which the metallic nickel is extracted from its ore in the form of nickel carbonyl, and at the same time relieved of its impurities. Metallic nickel is, of course, a great feature at this stand, but the characteristic green of nickel salts is also very much to the fore. In addition, the company are exhibiting copper sulphate crystals of their own manufacture, which always make an attractive display, and some rare metals of the platinum group add to the interest of the stand.

Murgatroyd's Salt Works, Ltd.

The firm of Murgatroyds is one of the old-established firms carrying on the ancient British industry of salt making at Middlewich, Cheshire, and are making a comprehensive exhibit of every grade of salt ranging from the coarse salt used for curing fish down to fine salt, analytically pure. To the preparation of a free running table salt great attention has been paid. The firm's "Merrisella" salt and "Danna" salt can both be exposed to a damp atmosphere for long periods without absorbing appreciable quantities of moisture. This property is not conferred by the addition of any substantial quantities of other chemicals, but depends essentially on physical treatment of the salt by means of new and interesting processes. In the chemical industry the chief use of salt is for the manufacture of salt cake. For this purpose a coarse but uniform salt which does not ball together is required. For other purposes in the chemical industry a quality free from the small quantities of calcium and magnesium salt contained in ordinary chemical salt is manufactured by Murgatroyds. There is a small but quite essential need for salt for pharmaceutical purposes. The firm's M. quality, which is guaranteed to conform to the requirements of the British Pharmacopœia, is shown. Lastly, sodium chloride is also used as a laboratory reagent, for which purpose Murgatroyds manufacture and are exhibiting their A quality, guaranteed analytically pure.

The Nolabo Polish Co., Ltd.

All interested in labour saving should visit this stand, where a demonstrator is at work showing the easy method of applying "Non-Slip" floor polish. In addition there are metal polishes for various purposes.

The Ofome Co.

This exhibit consists solely of a standardised cleanser "Ofome," specially designed to combine the uses of soft soap, household soap, cleaning powders, and benzene, and to reduce the cost and labour of cleaning by eliminating waste and the overlapping of various preparations. The firm claim to have put household and general cleaning on a new and scientific basis without risk of damage.

Orr's Zinc White, Ltd.

Zinc white lends itself to an interesting comparison with white lead in its effect as a pigment for paints, and the firm of Orr's Zinc White Co., Ltd., have not lost the opportunity of making this comparison in several ways to the advantage of the firm's product. There are, in addition to these displays of the results of using zinc white in paints, a number of samples of raw materials used both in the preparation of zinc white and in the production of various salts of barium, another speciality of the firm.

Price's Patent Candle Co., Ltd.

The exhibit of this firm shows candles of all kinds suitable for all climes, candles artistic, utilitarian, for the miner, for the piano, drawing room, hand-painted candles and the prosaic dips. It will be noted that considerable space is devoted in the exhibit to the new "Trylite" triangular candle, which represents the very latest stage in the evolution of this illuminant. The "Trylite" candle fits any candle-holder without the necessity for shaving, wrapping, or wedging, and is put up in attractive hexagonal packets of six candles, a useful shape for storing.

J. J. Rigby, Ltd.

The exhibits of J. J. Rigby and Co. include hard and soft soaps. The firm's soft soap is a pure vegetable oil potash soft product which is widely used by waste spinners. The hard soaps shown include soaps for textile works and for household use, such as Rigby's Marvellous Cleanser; Honey soap; and Greenolive soap. In addition to the finished products the firm show specimens of the raw materials used and the various stages in soap manufacture.

J. and E. Sturge, Ltd.

This firm is showing various samples of precipitated chalk. The tremendous range in the bulk of this product is demonstrated by graded samples and the suitability of their manufacture for dentifrices, and similar pastes and powders, due to its extremely fine state of division, is shown by illuminated lantern slide micro-photographs.

There is also a display of products obtained from the grape, including sodium potassium tartrate or Rochelle salt, potassium hydrogen tartrate or cream of tartar, neutral sodium tartrate, and neutral potassium tartrate. In addition there are products obtained from the lemon, including citric acid, in crystal, small crystal, granular, or powder form, and various citrates. Other products shown include potassium bicarbonate, pure potassium carbonate hydrated and anhydrous, fluid magnesia and lac magnesia, in small bottles ready for retail sale.

Joseph Watson and Sons, Ltd.

The firm is showing Watson's Matchless Cleanser, Nubolic disinfectant soap, Venus toilet soaps, Venus shaving soaps, Sparkla polishing and scouring powder, Bumpo washing powder, Wolsil shredded soap, etc.

The exhibit also includes the products of the firm's seed crushing mills, which supply their requirements of cotton-seed oils, soya oils, palm kernel oils, which are all used in the manufacture of their soaps. In addition they show the residuals in the form of feeding cakes.

Walpamur Co., Ltd.

This company's stand has been arranged to display the result of the application of the company's specialities, namely, Walpamur water paint, Muromatte flat oil paint, Duradio gloss paint, Mirabol enamel, Yeoman varnish, etc., and the scheme has been arranged for the space at their disposal to be dealt with so that it shall represent as far as possible a portion of the great hall of an old English country home, and is decorated in a practical manner to show how the modern small home of to-day as well as the great houses of the past lend themselves to decorative treatment by the paints, etc., mentioned above.

Whiffen and Sons, Ltd.

Whiffen and Sons are another firm who have a stand resembling the old-fashioned apothecary's shop with bow windows. They are showing a fine range of pharmaceutical preparations, atropine, hyoscine, emetine, caffeine, strychnine, quinine, etc., in many cases in the form of crystals of singular purity. Other chemical substances displayed are bromides of potash, soda, ammonia, and strontia; iodides of soda and potash, iodoform, and various essential oils including almond oil and clove oil.

Oliver Wilkins and Co. Ltd.

This firm of colour manufacturers has adopted an effective idea in displaying its colours by using the resulting paints on a number of cylinders placed in rows upon the wings of the stand, so that the very large range of beautiful shades available is displayed to the best advantage.

J. B. Wilkinson

In a space of about 4 ft. square only J. B. Wilkinson have arranged a very effective display of the products of the Dudley Hill Chemical Works, Bradford, consisting of samples of potassium and ammonium bisulphite, sodium sulphide in various forms, zinc formaldehyde sulphoxylate (reminiscent of the recent "Rongalite" inquiry) and sulphonated castor oil.

Williams Brothers and Co.

Williams Brothers and Co. are showing a complete range of aniline dyes in the dry form and in solution, as used for a variety of purposes, including leather, confectionery, boot and floor polishes, inks, woodstains, varnishes, writing, ruling, endorsing and printing inks, soap, wool, silk, cotton, jute, etc., etc. Other exhibits include dyed leather, candles and slabs of wax coloured with wax and fat soluble colours, oak panels showing principal woodstains, custard and egg powders tinted with harmless specialities, etc., etc., and nigrosine and induline of which the firm are the largest and oldest manufacturers in the country.

Uncompleted Exhibits

Among the exhibits in the Chemical Section not yet ready for notice are those of the following chemical and dyestuff manufacturers: F. E. Becker and Co., Ltd.; The British Dyestuffs Corporation; Grays Dyes and Colours, Ltd.; Hardman and Holden, Ltd.; J. F. Macfarlan and Co.; J. C. Oxley's Dyes and Chemicals, Ltd.; The Salt Union, Ltd.; T. and H. Smith, Ltd.; Thomas Tyrer and Co., Ltd.

We hope to describe the exhibits of these firms in later issues.

Some Engineering Exhibits

The notes below are intended merely to serve as an indication of the exhibits in the Palace of Engineering, which contains much of interest to the chemical engineer. The whole of such features will be reviewed comprehensively in another issue in the near future.

Babcock and Wilcox, Ltd.

One of the features of the Palace of Engineering is the Power Station, which is open to public inspection, and supplies power to the whole Exhibition. Babcock and Wilcox have supplied two patent water boilers with a capacity of 25,000 lb. per hour at a pressure of 220 lb. per square inch as part of the equipment of the Power Station. The boilers are fitted with Babcock and Wilcox chain grate stokers, equipped with coal meters by the Lea Recorder Co., Ltd., so that a check may be kept on coal consumption. One of the boilers is equipped with a Babcock and Wilcox Calorised Diamond Soot Blower and each is fitted with Green's Economisers. Feed pumps for these boilers have been installed by Worthington Simpson, Ltd., and there is a complete water softening equipment on the Permutit system for a capacity of 1,000 gals. per hour (normal) which has been installed by the United Water Softeners, Ltd. In addition there is ash handling plant, and coal shutes feeding from the coal bunkers, by Babcock and Wilcox.

There are also two 25 ton overhead electric travelling cranes of 72 ft. 6 in. span installed in the two northern avenues of the Palace of Engineering, where they have been of great value in moving heavy exhibits into place.

The firm also have a stand in Avenue 11 and 12, bays 23 and 24, where there is a comprehensive exhibit, including a number of specialities of their manufacture, largely represented by models. These include marine type boilers, land type water tube boilers, oil fuel burners, diamond soot blowers, feed water regulators and various boiler parts. Conveyors of various types are illustrated by models of installations, showing the gravity bucket and tray designs. A feature of interest on this stand is the Lassen-Hjort automatic water softening plant, with its arrangement for mixing the chemical reagent automatically. Among a large number of other exhibits may be mentioned continuous CO_2 indicator and recorder which shows clearly at all times the percentage of that gas in the flue gases.

Lancaster and Tonge, Ltd.

The "Lancaster" specialities on view in the Palace of Engineering include steam traps, dryers, piston rings, packings, etc. The "Lancaster" steam traps for pressures from 1 to 300 lb. per square inch have, as the chief feature of the new type, a loose valve operated by a quick threaded screw. By means of the air valve, the trap can be set to drain away any temperature of water from 212° F. upwards. The trap is very simple, and can be easily examined while at work by lifting the lid. The Bucket type trap is used where large quantities of water have to be drained at high temperatures. Owing to the bucket having a leverage of 6 to 1 over the valve, these traps have a much greater capacity than the ordinary Bucket type trap. "Lancaster" steam dryers work on the only accepted principle, that is by centrifugal force and by gravity, and are made in all sizes from 1 in. to 20 in. bore. The "Lancaster" pistons and piston rings shown include all types from super-limit rings designed for the highest pressures and superheats to the plain rectangular section piston rings, while the metallic packings for piston rods include both single and double types, also special packings for Corliss and other valve spindles, centrifugal pumps, air and ammonia compressors, and gas engines.

Pulsometer Engineering Co., Ltd.

A striking feature of the Pulsometer Engineering Co.'s stand in the Palace of Engineering, bays 14 and 15, Avenues 3 and 4, is the waterfall, water being raised continuously by one of the firm's centrifugal pumps, whence it is allowed to fall, making a striking exhibit. There are a large number of different types of pumps displayed on this stand, including the "Geryk" vacuum pump and numerous centrifugal pumps for various purposes. An interesting novelty is the Pulsometer ring pump, which is a high speed reciprocating type, said to be particularly suitable for circulating the cooling water in engine jackets and the brine in refrigerating plants, which latter form another feature of the firm's display, being shown in various forms.

One of the Pulsometer ammonia twin compressors is on view at the Exhibition and is well worth an inspection by those interested in refrigeration.

The "Geryk" vacuum pump is represented in the exhibit by a laboratory type. These single-cylinder pumps are capable of giving a vacuum up to 1/50th mm. off perfect, but for higher vacua the R.L. type is recommended. Pumps of the latter type are tested to ·00001 mm. before leaving the works, and ·000001 mm. is frequently obtained in the tests (measured on a McLeod gauge). The desiccation and distillation pumps are eminently suitable for chemical and kindred work, their special feature being that they will carry on desiccation to a degree considerably beyond that possible with the most efficient cold water condensing plants, and will evaporate moisture at a temperature below that of the surrounding air or that of the cooling water in the condenser. The most refractory bodies yield up their vapour in the high vacuum produced and results are obtainable that have not hitherto been possible.

British Industries Fair

Scientific and Chemical Exhibits

THE opening of the British Empire Exhibition should not be allowed to overshadow the fact that the annual British Industries Fair, organised by the Department of Overseas Trade, is being held this year at the White City, London, from April 28 to May 9. There is a section specially devoted to chemical, scientific and pharmaceutical exhibits which the visitor entering the White City from the Shepherd's Bush end will find on the left of the hall. On the right of the left gangway are also to be found exhibitors of domestic chemical products, soaps, perfumery, etc.

An important and representative section of exhibits is that devoted to opticians' supplies. The manufacture of these goods is a section of British industry which is in its bearing on national health important, and there will be ample evidence that the British manufacturer is able to produce at reasonable prices such goods as spectacle lenses, gold-filled spectacle frames and mountings, spectacle cases of all descriptions, ophthalmic instruments of various types, machinery for making spectacle lenses, and, indeed, all types of apparatus which are requisite for the proper equipment of the workshops and testing rooms of retail opticians, oculists, or wholesale jobbing houses.

Scientific equipment of a varied nature is also to be seen, including a comprehensive selection of meteorological instruments, clinical thermometers, thermometers of special sensitivity and accuracy, and also types for the use of photographers, for household and a variety of other purposes. Laboratory equipment are included.

Though the British Empire Exhibition has had a great attraction for the chemical industry, yet the British Industries Fair will provide the visitor with an important selection of British manufactures, covering a wide range of products, and should not be neglected. Samples of insecticides, fine and analytical chemicals, pharmaceutical chemicals, and heavy chemicals of various classes can be seen. Several important firms have taken large areas, and there will be many attractive and important exhibits. Many branches of the chemical industry are represented, so that the buyer requiring, for example, synthetic perfumery or chemicals of the highest purity is able to satisfy his requirements equally with one who is only concerned with such heavy chemicals as sulphate of ammonia, sulphuric acid, or coal tar products, salts of antimony, arsenic, and so on.

Soaps, perfumery, and druggists' sundries always constitute an important and attractive section. All classes of perfumery, cosmetics, pomades, toilet powders, hair washes, and the many and one things which are summed up in "toilet preparations," are there in profusion.

The Chemical Exhibits

Besides soap and perfume manufacturers, such as John Knight, Ltd., Cussons, Sons and Co., etc., there are only seven chemical manufacturers exhibiting this year, but these are very representative and as a whole the level of the exhibits is very high. The following notes deal individually with these exhibits :—

THE ACME CHEMICAL CO., LTD., though mainly producers of weed killer, also manufacture arsenite of soda and arsenate of lead, both of which are shown on the stand. Other exhibits consist of various horticultural chemicals supplied by the firm, and also silicate of soda which the company sell for egg preserving as "water glass."

FREDERICK ALLEN AND SONS (POPLAR), LTD., have a wide selection of chemicals of their manufacture for analytical and general purposes. There is a fine sample of fused calcium chloride in a glass case, but the firm's speciality is various grades of decolorising carbon.

BOOTS PURE DRUG CO., LTD., have samples of a very large number of analytical reagents, organic chemicals and prepared drugs, but a special feature is made of insulin, stabilarsan (an improvement on salvarsan) and saccharin. A very good diagram shows the stages in the production of saccharin from coal, with samples of the intermediate products, and illustrates the relationship between saccharin and the disinfectants chloramine T and dichloramime T.

THE MARLEY HILL CHEMICAL CO., LTD., are showing a series of glass jars containing various coal tar products, cresols, sulphate of ammonia, etc.

POWELL DUFFRYN STEAM COAL CO., LTD., in addition to an effective display of crude and refined coal tar products, such as anthracene, benzol, naphtha, cresols, sulphate of ammonia, etc., are making a special display of some new productions. These are dehydrated tar, superblack varnish, which is an acid-resisting bitumen paint for indoor or outdoor use, and carbogrout, which is a preparation for laying tramway sets, etc.

STOCKTON-ON-TEES CHEMICAL WORKS, LTD., are showing a new organic fertiliser known as the N.P.K. (Pease Process). This contains a high percentage of organic matter and is rich in water-soluble plant foods. In addition barium salts and zirconium salts have a prominent place on the stand, while there are also various other miscellaneous chemicals manufactured by the firm, among which phosphoric acid may be mentioned.

TYPKE AND KING, LTD., specialise in antimony sulphide for rubber pigmentation, and this is shown in red and yellow forms. There are also various grades of rubber substitute of various colours and consistencies on view.

Progress in Artificial Silk

A Strasbourg Enterprise

AFTER an appeal for subscription of barely three weeks' duration, the Soieries de Strasbourg (a correspondent writes) was definitely constituted on Saturday, April 19. The issue of shares has been made under exceptionally favourable conditions, and three-fifths of the capital is represented by about 200 persons. The Board of Directors is composed of :—Mr. Emile Bronnert, D.Sc., of Strasbourg, President; Mr. Henry Bronnert, shipping merchant, Manchester; Mr. Nicolas Schlumberger, Guebwiller, Vice-President; M. Adolphe Sorgius, Strasbourg; and Mr. Rene Stolz, engineer and director, of Zinswiller (of Dietrich and Co.).

The processes employed in the manufacture of artificial silk are undergoing great improvement. The part which the founder of the Soieries de Strasbourg has taken in the history of this industry is too well-known to require repetition. In 1922, Mr. Emile Bronnert, at a meeting of the Society of Dyers and Colourists in Manchester, summed up the processes of evolution by which it has become possible for the natural silk of the silkworm to be surpassed and artificial silk produced to any given degree of fineness, and this without necessitating any alteration to existing plant.

Among the new processes which Mr. E. Bronnert has introduced to the Soieries de Strasbourg there is a further one which meets the need for an artificial silk more resistant to water. The new processes of "Karplussage" will permit not only of an increase of strength and homogeneity of viscose silks in the dry state, but will increase resistance to moisture by as much as 100 per cent. of what has hitherto been the case. It is not unlikely that in due course the problem will be completely solved and that silk will be equal to cotton in respect of its resistance to water. This process is not to be confused with the operation known as "ethenosage." The new process gives a permanent effect on the fibre and evenness of shade, and will naturally be kept secret. Artificial hair, straw, wool and chappe will also receive attention. The Soieries de Strasbourg starts therefore with good prospects.

Fused Quartz Developments

A METHOD has been found, according to a correspondent of *The Times*, after ten years of experiment, of making clear fused quartz in large quantities at a cost low enough to render its commercial manufacture practicable. At Lynn, Massachusetts, on Monday, the General Electric Company exhibited quantities of this fused quartz in a variety of forms and in an amount a thousand times larger than has ever been seen in one place before. It has many valuable qualities, one of the most important being that, unlike ordinary glass, it permits the passage through it of ultra-violet rays, and so may be of great use in medicine and surgery. Quartz rods have extraordinary ductility, and the co-efficient of expansion is only one-sixteenth of that of platinum. In the opinion of Dr. Stratton, former head of the Government Bureau of Standards, fused quartz will probably be used for standards of length because of its low expansion.

Reviews

QUALITATIVE ORGANIC ANALYSIS. By Oliver Kamm. New York: Wiley and Sons. Pp. 260. 12s. 6d.

Systematic qualitative organic analysis is probably less satisfactorily taught than any subject in the ordinary curriculum of an average chemical student. This results partly from the fact that, consequent on limited university staffs, a student frequently has to begin this section of his work before he has completed his basic theoretical organic chemistry, and partly because the subject does not readily lend itself to systematic treatment. The author has sought to remove the latter reproach by arranging empirically in seven divisions those organic compounds that are most frequently encountered by a student. The classification is as follows :—A, soluble in water—(1) soluble in ether; (2) insoluble in ether. B, insoluble in water—(3) soluble in dilute HCl; (4) soluble in dilute KOH; (5) indifferent compounds of carbon, hydrogen, and oxygen, soluble in cold concentrated H_2SO_4; (6) *ditto*, insoluble in cold concentrated H_2SO_4; (7) indifferent compounds containing nitrogen or sulphur. Subsequent to solubility determinations the student is instructed to carry out tests for organic groupings; physical characteristics are then to be noted, and finally reference is to be made to a classified list of some 2,000 compounds arranged in order of solubility groups, the physical data being quoted for each substance.

The method outlined by the author has already been in use for some years in the University of Illinois and has been found satisfactory, but it has not yet been applied widely in this country.

Approximately half the text is devoted to theoretical considerations, and half to laboratory directions. The latter have been most carefully framed, and in executing them the student will learn economy, for rarely is the employment of more than 1 grm. of experimental substance indicated. Throughout the book is interspersed a large number of questions for a student's consideration. Some of these can be treated perfectly by reproducing a text-book, but others are excellent; they will stimulate much thought, and are calculated to produce that desirable type of student who always wants to know "the reason why."

American spelling and nomenclature are adopted: when one is accustomed to them they are hardly noticeable although tertiary amyl alcohol is rarely described in this country as amylene hydrate (page 27). Other points that have been noted are:—on page 60, aniline hydrochloride is given the graphic formula of phenylammonium chloride; the sulphonation of naphthalene, as indicated on page 37, is apt to be misleading, and the page references, in an otherwise most detailed index, could be made more complete with advantage.

In one instance the author would seem to have departed from the admirable judiciousness that marks the rest of the volume. Commenting on certain dye specialists who have criticised adversely a section of Professor Mulliken's exhaustive work of reference he remarks, "the technical worker who is most prolific in his criticism is usually the one who is most secretive with his own results" (page 98). Apart from the fact that the statement hardly lies within the scope of the volume, the implied reproof does not seem justified. Chemists are not a secretive race, but despite the best of intentions, they have honourably to conform to the policy dictated for them by those in authority in the competitive industrial organisations they serve. Perhaps, now that Dr. Kamm has become the Director of Chemical Research in one of these industrial corporations he would be prepared to grant as much.

The *format* of the book, paper, and printing are all that could be desired, and typographical errors are conspicuously absent.

D. IVOR JAMES.

COLLOID CHEMISTRY. By The Svedberg. New York: The Chemical Catalog Company Inc. Pp. 265. $3·00.

This very interesting book is based on a course of Colloid Chemistry delivered at the University of Wisconsin in 1923. It is not merely modern and up-to-date, but the subject matter embodies almost everything of importance and original in all branches of this science. The colloid particle is dealt with from formation to destruction. Few chemists can claim such experience in the production of colloids as Svedberg, and the section dealing with that side of the subject is written in the same brilliant fascinating style as his previous works. The electric dispersion of metals, which was originally discovered by Bredig, but made prominent by Svedberg, is dealt with at some length, and much of his recent work is included, such as the application of the oscillatory arc. Other chapters of interest describe mechanical dispersion in general, the colloid mill, and atomisation by air pressure. The description and investigation of the properties of colloids and the laws which govern colloidal particles are also treated in an attractive manner. Sedimentation, Brownian movement, ultramicroscopy, ultrafiltration, X-ray analysis, absorption, cataphoresis and its allied phenomena, all find appropriate discussion. In illustrating the properties of colloids Svedberg shows a preference for synthetic colloids rather than gelatine and other natural bodies. This is obviously of great advantage, since colloidal gold, which is prepared under definite conditions, is always the same; while the samples of gelatine from two different batches probably vary in certain particulars, although frequently we have no means of proving it. 115 illustrations, line drawings and graphs serve to facilitate the perusal of this volume, which, in spite of its highly scientific character and proportionate amount of mathematics, is easily read. As a standard textbook of Colloid Chemistry it has few equals.

S. P. S.

LOW TEMPERATURE CARBONISATION. By C. H. Lander and R. F. McKay. London: Ernest Benn, Ltd. Pp. 278. 35s.

It is difficult within the scope of a short review to deal adequately with a volume of such far-reaching importance as Lander and McKay's *Low Temperature Carbonisation*. The fact that the authors are both associated with the Fuel Research Board, the former as Director, implies that an authoritative pronouncement on the subject (long overdue) may be expected, and the reader is not disappointed.

It has long been the merest truism that if low-temperature carbonisation should become commercially possible, not only would some of the problems of the more efficient utilisation of our waning coal resources be solved, but also those of smoke abatement and the home production of fuel oil for the Navy and Mercantile Marine. The association of the authors with the researches of Sir George Beilby and the experiments carried on at H.M. Fuel Research Station has resulted in a closely reasoned work which falls naturally into three broad sections. These deal with the properties of coal which must be taken into consideration in connexion with its carbonisation at low temperatures; the various problems, chemical, mechanical and economic, which confront the worker in this field; and lastly, a description of the various methods adopted in attacking these problems, with a clear and concise setting forth of the data thus produced, and a discussion of the possibilities which now arise.

As a general review of the position in connexion with low temperature carbonisation, Messrs. Lander and McKay's book will, it may confidently be expected, become the standard work of reference on a subject which the authors have made their own. *Low Temperature Carbonisation* stands out in contradistinction to other treatises of the same kind (frequently little more than catalogues of plant) in that it is devoted to the discussion of the problem as a whole; and, while all the principal methods so far adopted have come under review in its pages, the description of the various plants has been reduced to a minimum.

The concluding chapter on economics, the tentative balance sheets in which deserve careful study, shows that, as far as can be seen at present, the commercial success of a plant will be chiefly dependent on the ratio which the price commanded by the resultant coke will bear to the cost of the raw coal.

G. B.

Nitrogen Products

A SUBSCRIBER is anxious to secure a copy of the "Final Report of the Nitrogen Products Committee," which we understand is now out of print. A reward is offered for a copy in good condition.

D

Glass-Lined Apparatus for Chemical Processes

Diverse Applications

Owing to the chemical limits of the ordinary steel container a demand has arisen during the past few years, particularly for the more delicate operations of the chemical industry, for a container which, while possessing the durability of steel, will also exert no influence on the chemical process. It is to satisfy such a demand that the manufacture of glass-lined steel equipment owes its inception and its progressive development.

This apparatus is now very satisfactorily employed in such diversified operations as the manufacture of dyes, the recovery of tungsten, the reclamation of platinum residues, and for holding volatile oils in the manufacture of perfumes and pharmaceutical products. It has been found in practice that this equipment may be subjected to rapid heating by oil or steam circulation without running the risk of damaging the lining in any way. Other advantages are that it is lighter than either earthenware or stoneware, and that corrosive acids and compounds have been held without impairing the enamel.

A typical container of this type is a portable tank, which is extremely useful for the transportation of liquids instead of using a piping system which, for some reason or other, may be impracticable. This tank may also be used for storage, or, equipped with tilting mechanism, as a tilting tank. A typical vessel of this nature, to take the Pfaudler for instance, has a shell of $\frac{1}{8}$ in. open hearth plate steel and a lining of acid-resistance glass enamel.

Another container of almost universal application is the open crystallising pan to hold anything from 50 to 300 gallons. This is of similar construction, and may be fitted with a bottom outlet.

These are two of the simplest forms in which this glass-lined apparatus is constructed. A unit of more complicated type is the closed jacketed mixer. This can be used either under vacuum or pressure for heating, mixing, distilling and digesting a wide variety of solutions containing strong organic or inorganic acids. The agitator, which is either centred or "off centre," is also enamelled, so that no metallic contamination is possible throughout the entire vessel.

Some typical uses of this apparatus may be briefly mentioned as indicating its wide field. In one large works glass-lined percolators are used for handling vanilla extract, the tank being fitted with a heating coil and two perforated trays suspended in the tank. Between these trays are placed the vanilla beans, the alcoholic menstruum circulating through the beans. These percolators handle 200 gallons each to a batch, percolation being carried out at about 129° F., and being completed in three days of nine hours each.

In another case the wax used in the manufacture of gramophone records is melted in glass-lined tanks, jacketed oil circulation being used. One of the most up-to-date tooth-paste factories in the world, in London, uses these tanks for holding glycerine and alcohol; indeed this apparatus is finding very extended use in tooth paste factories throughout the world.

Hartland Seymour.

Cause of a Starch Dust Explosion

The U.S.A. Bureau of Chemistry has just issued a report on the causes of the recent explosion of starch dust which wrecked a factory at Pekin, Illinois. It was found that the actual source of heat which ignited the dust arose from a hot bearing on a screw conveyor, which first set fire to the wooden housing and thus exploded the dust. It may be noted that there was at this factory a special "safety staff" to watch the condition of the plant, with particular attention to the dust hazard, so that it may be emphasised that precautions of this kind are of little value without adequate provision for such matters as automatic lubrication of moving parts. This has been embodied in the recommendations in the report, and great stress has also been laid on the need for the whole construction in plants where there is danger of explosion to be designed to minimise the risk and prevent explosions if once started from spreading outside the smallest practicable area.

Chemical Matters in Parliament

Dyestuffs

Mr. Webb, President of the Board of Trade (House of Commons, April 29), replying to a question by Mr. Black, said that no reparation dyestuffs, with the exception of samples for experimental purposes, were sold to the British Dyestuffs Corporation. The prices at which reparation dyestuffs were sold to merchants and consumers were fixed by the Board of Trade, with the help of an informal committee consisting of two representatives of the British Dyestuffs Corporation, as selling agents, and two representatives of the Colour Users' Association.

Replying to a supplementary question by Mr. Graham White, Mr. Webb said: The total number of applications for licences received during the three months ended on March 31 was 1,420, to which must be added 17 outstanding at the beginning of the period. Of the total of 1,437, 1,152 were granted, in 56 cases applicants were referred to reparation supplies, 207 were refused, and 22 were outstanding at the end of the quarter.

Lake Magadi Soda Concessions

Mr. Ormsby-Gore (House of Commons, April 29) asked the Secretary of State for the Colonies whether, in view of the fact that Messrs. Brunner Mond made an offer to take over and work the assets of the Magadi Soda Company in Kenya, which offer was conveyed by him to the Government of Kenya, that the Government of Kenya informed him that they were willing to accept Messrs. Brunner Mond as tenants, and that the proposed transfer of the assets of the old Magadi Soda Company to Messrs. Brunner Mond was approved by the liquidator, he would state why, on March 24, he informed the Government of Kenya and Messrs. Brunner Mond that he would refuse to renew the soda concession to Messrs. Brunner Mond?

Mr. Thomas: A scheme for the reconstruction of the Magadi Soda Company was prepared during 1923, approved by the liquidator, the Kenya Government and my predecessors and circulated to the shareholders last January. Messrs. Brunner Mond then came forward with an alternative scheme which the liquidator and the Kenya Government were prepared to accept, but after careful consideration I decided that the scheme approved by my predecessors should stand, as it offered better prospects of maximum production from Lake Magadi. In view of the recent order for compulsory liquidation, negotiations on the whole question have been reopened.

Chemical Industry as a Sport

Our American contemporary *Drug and Chemical Markets*, in commenting on the present position in the chemical industry in the United States, makes the following somewhat caustic remarks:—

"The chemical field has ceased to be a money-making business, so far as most factors in the industry are concerned, and is gradually taking on the guise of a newer-day sport, something similar to polo, or the maintenance of a racing stable. In short, maintaining a chemical establishment has come to be one of the most expensive of sport luxuries. If prices continue on their present trend, only genuine sportsmen will care to take the long chances of the business, and only sportsmen with copious financial backing will be able."

Methylated Spirits

In the course of his Budget speech in the House of Commons on April 29, Mr. Snowden, Chancellor of the Exchequer, referred to steps which are being taken to assist in the suppression of the evil of methylated spirit drinking. It had already been possible, he said, to make arrangements under the existing law by which, on and after May 1 next, methylated spirits sold to the general public for domestic purposes shall contain an additional denaturant, which he was advised would make the spirits so nauseous and so difficult to swallow, and, if that state be overcome, would make the victim so ill—but not mortally so—that he would not be likely to attempt to defraud the revenue by continuing to drink them.

From Week to Week

THE BRITISH METAL CORPORATION, LTD., of 3, Abchurch Yard, London, E.C., have opened a branch office in Swansea, at 20, Wind Street (temporary premises).

A FIRE, caused by tar boiling over, occurred on Thursday, April 24, at Canal Bank, Trundleys Road, Deptford, on the premises of A. J. Dickinson, Ltd., manufacturing chemists. A quantity of tar was destroyed, and some corrugated iron roofing damaged by fire.

MR. R. B. ARMSTRONG, of R. and W. Hawthorn, Leslie and Co., Ltd., St. Peter's, gave a lecture on Tuesday to members of the Foremen's Mutual Benefit Society, Newcastle, on the subject of "Water Tube Boilers." Sir Archibald Ross, K.B.E., presided, and the lecture was illustrated by lantern slides and a working model.

MR. L. J. ELLACOTT GENNER, who for the last four years has been responsible for Western Electric Advertising, is transferring his services to the National Federation of Paint, Colour and Varnish Manufacturers of the United Kingdom in the capacity of manager and secretary of the "Paint More, Save More" campaign.

A SERIOUS FIRE broke out on Friday, April 26, at 13a, Derby Road, South Hackney, on the premises of Davis Brothers, Ltd., varnish manufacturers. The entire place was practically destroyed in three-quarters of an hour. The roof was partly burned off and a quantity of stock in the yard destroyed by heat, water and breakage.

THE SECRETARY to the Ministry of Labour announces that the number of persons on April 21 recorded on the registers of employment exchanges in Great Britain was 1,050,500. This was 11,313 more than on April 14, but 235,123 less than on December 31. The total for April 21 is made up of 775,600 men, 32,400 boys, 210,200 women, and 32,300 girls.

THE RECENT ADVANCES in colloid chemistry have resulted in the United States in a proposal to raise $1,000,000 to build and endow a National Institute for Colloid Research at the University of Wisconsin. A prospectus embodying the proposed scheme has just been issued, which includes detailed estimates as to costs and also a plan of the proposed building.

THE MANCHESTER CHAMBER OF COMMERCE Monthly Record for April states that the chemical trade for the month has been quiet, few of the orders placed being of large dimensions. Caustic soda has met with a fair demand, both for home and export trades, and soda crystals have had a readier sale, but bleaching powder has not been much wanted owing to the curtailment of working hours in the cotton trade.

THE CHEMICAL TRADE INDUSTRIAL COUNCIL on Friday, April 25, discussed an application from the workers' representatives for increases of 1d. per hour for time workers, 1½d. for shift workers, 10 per cent. for piece workers, and double time pay for week-end work. The employers' representatives were unable to agree to the advances, but accepted the trade union representatives' proposal to refer the case to the Industrial Court for arbitration.

THE DEATH took place on Friday last of Mr. Alfred Wilson, at his residence, 12, Woodbourne Road, Edgbaston. Mr. Wilson, who was a manufacturing chemist associated with the firm of Messrs. J. and E. Sturge, Wheeley's Lane, Birmingham, was the youngest son of Mr. J. E. Wilson, of Edgbaston. He married a daughter of Sir Joseph Whitwell Pease, of Darlington. Mr. Wilson was a prominent member of the Society of Friends and was chairman of the National Institution for the Blind, Birmingham.

THE FUNERAL of Mr. Lewis Ough, who died at Leicester the previous week at the age of 56, took place in his native town of Liskeard, Cornwall, on Wednesday, the coffin being borne to the family grave in the churchyard by brethren of the local lodge of Freemasons. Mr. Ough was an analytical chemist, and when owing to ill-health he resigned the managership of a well-known Leicester firm of manufacturing chemists, he became consulting chemist to another leading concern in the town. He was a prominent Mason and had occupied the chair of the John o' Gaunt Lodge.

IN ACCORDANCE WITH THE sliding scale agreement, the wages of operatives in the dyeing and finishing industry in Yorkshire and Lancashire are to be adjusted on the first pay day in May on account of the fall of the cost of living figure from 77 in January, when the last adjustment was made, to 73 for this month. The revision represents a reduction of 1s. 1d. in the average wage of an adult day worker. The new rate for time workers will be 77·25 per cent. above the base wage, against the present rate of 80·62. For piece workers the rate will be 61·78 above the base instead of 64·50. About 100,000 operatives are affected.

A PAPER ON "The Rubber Tyre from the Automobile Engineer's Point of View" was read to members of the Institution of the Rubber Industry in Birmingham on Thursday, April 24, by Mr. H. S. Rowell, director of the Research Association of British Motor and Allied Manufacturers. Mr. Bernard Caillard presided. Mr. Rowell said that the tyre must act as a spring as well as a cushion and exert resistance to lateral sliding and skidding. As to puncture-proof tyres the lecturer made the suggestion that all tyres should be sold already sealed at various inflation pressures in the same manner as electric light bulbs were sold.

Institute of Chemistry

AT the April examinations the following candidates passed the examination for the Associateship:—*General Chemistry:* Balfour, R. P., Heriot-Watt College, Edinburgh; Gibby, C. W., University College, London; Green, F. J., B.Sc., (Lond.), West Ham Municipal College; Harrison, G. W.; Laing, A. G., B.Sc., (Edin.), Heriot-Watt College, Edinburgh; McCarter, G. L., Royal Technical Institute, Salford; Milne, L. B., Sir John Cass Technical Institute; Myers, C. F., B.Sc., (Lond.), Huddersfield Technical College; Philp, J. L., Heriot-Watt College, Edinburgh; Wright, W. E., King's College, London. *Chemistry, including Microscopy, of Food and Drugs and of Water:* Maplethorpe, C. W., School of the Pharmaceutical Society.

The following candidates passed the examination for the Fellowship: *Agricultural Chemistry:* Bhagavatula Viswanath. *Chemistry, including Microscopy, of Food and Drugs and of Water:* Norman, G. M., B.Sc., (Lond.), A.R.C.S.; Thin, R. G., B.Sc., (Edin.). *General and Analytical Chemistry:* Hollingsworth, C.

Oil Company in Voluntary Liquidation

A MEETING of the creditors of the Duroline Oil Co., Ltd., Christmas Street, Bristol, was held recently at Bristol, when a statement of affairs was presented which disclosed liabilities of £908 19s. 7d., all due to trade creditors. The assets totalled £1,590 10s. 3d., or a surplus of £681 10s. 8d. The nominal capital of the company was £3,000, of which £2,510 had been issued. The accounts showed that the sales for the nine months ended December 31 last amounted to £3,423, while the trading loss to that date was shown at £343. The present position was attributed to large sums having been expended in advertising and extensive credit given to customers. The matter was discussed, and it was decided to confirm the voluntary liquidation of the company, with Mr. F. A. Webber as liquidator, while a committee of inspection was also nominated, consisting of the Anglo-American Oil Co., Ltd., F. F. Fox and Co., and W. A. Lewis and Co.

Affairs of "Redfern"

A MEETING of the creditors of Ernest Nixon, trading as Redfern, 57, Bell Street, Oldham, wholesale druggists, was held recently in Manchester. Mr. R. Hey, representing the principal trade creditors, was elected to the chair. The statement of affairs presented showed liabilities of £4,073 13s. 4d. of which £1,818 6s. 10d. was due to the trade and £1,566 3s. 10d. to cash creditors. The assets were estimated to realise £4,011, from which had to be deducted £122 8s. 9d. for preferential claims, leaving net assets of £3,888 11s. 3d., or a deficiency of £185 2s. 1d. A resolution was passed in favour of the matter being dealt with under a deed of assignment, with Mr. C. Sunderland, 15, Eastcheap, E.C., as trustee, together with a committee of the principal creditors. It was stated that there was a possibility of the firm of moneylenders, from whom the debtor had borrowed money, refusing to agree to the matter being dealt with under a deed.

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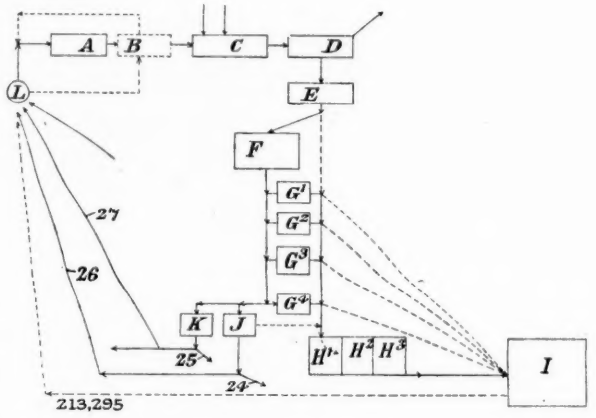
Patent Literature

Abstracts of Complete Specifications

213,295. Molecular Conversion of Hydrocarbon Oils and the Separation of Resultant Products, Process and Apparatus for. G. P. Lewis, Fuel Research Station, New Denham, Uxbridge. Application date, September 27, 1922.

The hydrocarbons or residues from the subsequent processes are forced by a pump L into a chamber A into pipes of small bore at sufficient pressure to maintain the hydrocarbons in a liquid state. The oil then passes to a heat exchanger B to reduce its temperature and preheat the oil which enters the pump L. The oil then passes into vaporising chambers C, arranged in series and provided with admission pipes for hydrogen and for supplementary raw oil. These chambers are maintained at temperatures which are regulated between 160° and 300° C., and in which the pressures are gradually reduced from about 50 lb. per square inch in the first chamber to atmospheric pressure. The temperature in the preliminary heater A may be 350°-550° C., and the corresponding pressure between 100 and 300 lb. The liquid and vapour from these chambers pass to a condenser D, and liquid passes on to a tank E and still F. The fractionation may be conducted *in vacuo* when lubricating oils are present, and these oils are collected in the tank G^1, burning oils in the tank G^2, naphtha in G^3, and motor spirit in G^4. The treated oil from the tank E may pass directly to a refining apparatus L, or through a series of catalytic vessels H^1, H^2, H^3. Gas oil collected in the tank J from the still F and residues from the still collected in the tank K may be drawn off at 24 and 25, or may be returned through pipes 26, 27 to the pump L. The vaporising chamber C may contain a catalytic material such as bauxite to eliminate sulphur, etc., and high tension electric currents may also be passed through the gases. The catalyst in the vessels H^1, H^2, H^3, may be a product obtained from precipitated aluminium hydroxide.



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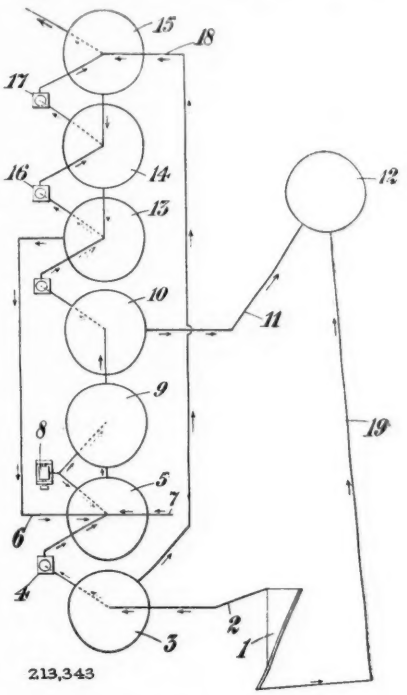
213,343. Leaching of Copper Ores Containing Slimes. T. J. Taplin, Jun., 16, Lordship Park, Stoke Newington, London, N.16, and Metals Production, Ltd., 62, London Wall, London, E.C.2. Application date, January 1, 1923.

This is an improvement in the leaching of copper ores containing slimes by the processes described in Specifications Nos. 185, 242, 190, 246, and 203,383 (see The Chemical Age, Vo.. VII., p. 503; Vol. VIII., p. 67; and Vol. IX., p. 400). The slimes are first separated from the copper ore and leached by suspension in a large proportion of the total leaching liquor required for the process, with accompanying aeration, and the same liquor is subsequently used for leaching the sands. In treating the slimes with ammoniacal solvent, a weak solution of copper is obtained, so that loss of the metal or ammonia in the liquor which cannot be freed from the slimes is minimised. The ammoniacal pulp is aerated so that the copper is in the cupric condition, and is thus particularly suitable for treating the metal contained in the sands. The copper content contained in the solution is thus raised to a value suitable for economic evaporation. In an example, the slime, which may be 20 per cent. of the ore, is separated in a wet classifier 1 and passes through a pipe 2 to a thickener 3 from which the pulp is drawn by a pump 4 to an agitator and aerator 5. Liquor



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from previous washings enters by a pipe 6, and ammonium carbonate by a pipe 7. The mixture passes through another agitator 9 and thence to a thickener 10. The liquor passes on to a sand leaching plant 12, which receives the sands from the classifier 1. The slime passes to other vessels 13, 14, 15, where it is washed with water which was separated in the thickener 3, and passes in counter current through these vessels.

213,438. Decolorising Earths and Body Colours, Process for the Manufacture of. C. E. J. Goedecke, 68, Major Street, Manchester. From W. Eberlein, Kochel, Upper Bavaria, Germany. Application date, April 10, 1923.

Silicates and other minerals are converted into bleaching materials when mixed with alkaline solutions of organic matter, dried, and heated to incandescence in the absence of air. The activity is partly due to the finely divided carbon and partly to the silicates. In this invention, the suspension of natural or artificial silicates is mixed with alkali and organic matter, and heated to boiling point under ordinary or increased pressure. The silicates preferred are those rich in colloidal particles, and in zeolitic matter. Most of the natural aluminium silicates contain sufficient organic matter as an impurity. The quantity of added alkali should be kept sufficiently low to prevent the formation of aluminates or water soluble silicates. The earths thus produced are highly absorbent, and when boiled with a basic dyestuff the latter is fixed by the earth, and body colours are obtained. In an example, a mixture of clay, lignite, alkali, and waterglass is boiled and the resulting earth is washed and dried, and may then be treated with a basic dyestuff.

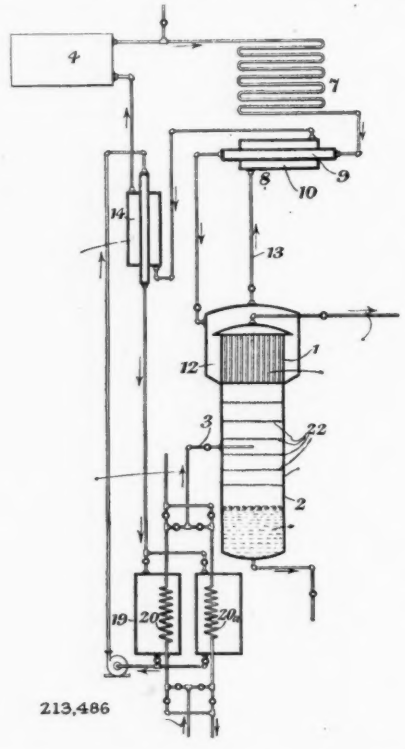
213,454. Compounded Rubber, Manufacture of. W. J. Mellersh-Jackson, London. From the New Jersey Zinc Co., 160, Front Street, Manhattan, New York. Application date, May 8, 1923.

In this process a rubber composition is made by the use of a special form of zinc oxide as a reinforcing agent. The zinc oxide has an average particle size nor exceeding 0·15 microns,

it has the property of substantially accelerating the vulcanisation, and has the power of imparting to the rubber composition an increased resistance to abrasion of about 50 per cent., an increase in tensile strength, and improved ageing. This zinc oxide is produced by oxidising an issuing stream of metallic zinc vapour by a blast of relatively cool air, so that the air envelops the issuing zinc vapour, and instantaneously cools the particles of zinc oxide to a temperature below 350° C. The zinc oxide vapour may be diluted by other gases such as carbon monoxide, nitrogen, or hydrogen. The zinc is volatilised in an electric furnace at the rate of about 500 lb. per hour, and the vapour escapes through a nozzle of 8 inches diameter, surrounded by an annular air blast of about 4,500 cubic feet per minute. The product is practically free from chlorides and sulphates, and has an acidity of about 0·02 to 0·04 per cent. SO_3. It is found that this zinc oxide differs from the zinc oxide usually employed in that it produces a marked acceleration of the vulcanisation without the presence of any other accelerator. The usual organic accelerators do not hasten the vulcanisation in the presence of the zinc oxide, but produce a composition of higher tensile strength and greater stiffness.

213,486. PURIFYING CHLORINE AND OTHER CORROSIVE GASES, PROCESS OF. E. C. R. Marks, London. From Carbide and Carbon Chemicals Corporation, 30, East 42nd Street, New York. Application date, July 16, 1923.

The process is for liquefying the constituents of gas mixtures which cannot be handled in ordinary compressors owing



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to their corrosive action. Examples of such gases are impure chlorine, burner gases containing sulphur dioxide and sulphuric acid, and the reaction mixture obtained in the chlorination of methane. In the liquefaction of chlorine gas of 85 per cent. purity, it may be shown by the application of Dalton's law that to obtain substantially complete liquefaction of the chlorine, a high pressure or a very low temperature is necessary. In this invention, low pressures are used with correspondingly low temperatures down to —75° C., which is necessary to liquefy 99 per cent. of the chlorine. These temperatures cannot be obtained with the usual refrigerants, but may be obtained by using methane.

The impure chlorine enters the coil 20 where it is cooled to —25° C., and the combined liquid and gas pass through the pipe 3 to the rectifying column 2, which is at 10–15 lb. gauge pressure. The liquid falls over the lower rectifying screens 22, and the gaseous chlorine and impurities pass upwards and are met by super-cooled liquid chlorine from the reflux condenser 1. The liquid chlorine is thus warmed to a temperature at which its solvent power for the gaseous impurities is reduced. The gases pass into the condenser 1, which is maintained at —75° C., and the remainder of the chlorine is condensed. Pure liquid chlorine collects in the bottom of the column 2, and is withdrawn. The compressor 4 receives ethane and discharges it at 800 lb. per square inch to the atmospheric cooler 7. The ethane then passes to heat exchanger 8, having a jacket 10 which receives low temperature ethane evaporated at condenser 1, and the ethane is liquefied in the inner tube 9. The liquid ethane is expanded into the jacket 12 to cool the condenser 1, and the resulting gas passes through pipe 13 and jacket 10 to jacket 14, where it is employed to cool brine to —25° C. before returning to the compresser. The brine is circulated to the cooler 19 containing the coil 20. The coil 20 is duplicated at 20a, so that one may be cut out for the removal of condensed impurities.

213,521. PRODUCING INTIMATE MIXTURE BETWEEN GASES AND LIQUIDS, APPARATUS FOR. Farbenfabriken vorm. F. Bayer and Co., Leverkusen, near Cologne, Germany. International Convention date, April 6, 1923. Addition to 199,718.

Specification No. 199,718 (see THE CHEMICAL AGE, Vol. IX, p. 237) describes an apparatus for mixing gases and liquids in which a number of discs are mounted on two parallel horizontal shafts rotating in opposite directions. These discs dip into the liquid, which is sprayed into the space above, while the gas is also admitted to this space. In this invention the chamber is provided with an inner wall of inclined slats, which direct the treated liquid into collectors at the sides. The treated liquid is thus prevented from returning to the unsprayed liquid, and the apparatus is thus particularly suitable for reactions in which a single contact of the gas with the liquid is sufficient.

NOTE.—Abstracts of the following specifications, which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention: 186,912 (Nitrogen Corporation) relating to a process for synthesising ammonia, see Vol. VII, p. 830; 198,376 (B. E. F. Rhodin) relating to electrolytic separation with fused electrolytes, see Vol. IX, p. 130.

International Specifications not yet Accepted

211,845.—NITRIC ACID. Farbenfabriken vorm. F. Bayer and Co., Leverkusen, near Cologne, Germany. International Convention date, February 26, 1923.

Nitrous gases are passed with water and oxygen or air over an adsorption medium such as porous or activated silicic acid. Nitric acid is produced, and acid of 80–90 per cent. concentration is obtained by heating. Alternatively, the air and steam may be passed over the adsorption medium containing the nitrous gases, or may be added during the adsorption of these gases.

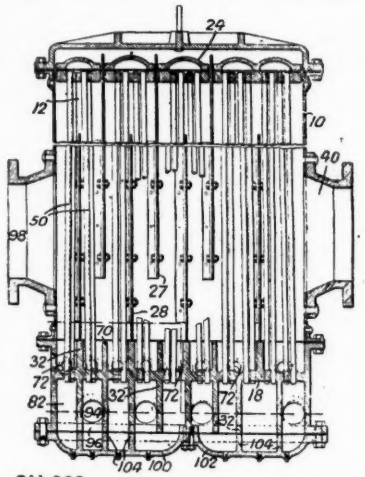
211,857. AMMONIA AND ALKALI CYANIDES. Naamlooze Vennootschap Stikstofbindingsindustrie Nederland, Dordrecht, Holland. International Convention date, February 21, 1923.

Nitrogen is fixed by an alkali compound and a catalytic metal such as iron, and the mixture of cyanides and complex cyanides obtained is heated with water under pressure, and a free base such as soda, to yield ammonia and a formate. If the fixation of nitrogen is stopped when free alkali is present, the subsequent addition of alkali is unnecessary.

211,882. DISTILLING OIL. C. H. Leach, 261, Franklin Street, Boston, Mass., U.S.A. International Convention date, February 21, 1923.

Oil distillate is condensed in a condenser in which different cooling liquids, including the incoming oil, can be used to cool different fractions at different temperatures. The cooling tubes 12 are fixed at their lower ends in a plate 18 and at their upper ends in separate headers 24, the whole being enclosed in a casing 10. The oil vapour enters at 40 and leaves at 98. The chamber below the plate 18 is divided by flanges 32 on

the plate 18 and flanges 104 projecting upwards from the outer plates 100, 102. If the latter plates are interchanged, different arrangements of chambers are obtained. As shown, water passes from the inlet chamber 82 through tubes 12 to the



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outlet 94, and oil through the remaining tubes. Baffles 27, 28 are provided to deflect the vapour in passing over the tubes. The condensation is collected in separate chambers formed by baffles 70 projecting from the plate 18.

211,886. ACTIVE CHARCOAL. Ges. für Chemische Produktion 156, Sandhoferstrasse, Waldhof, Mannheim, Germany. (Assignees of R. Adler, Villa Preciosa, Karlsbad, Czecho-Slovakia.) International Convention date, February 22, 1923.

A cellulose material such as wood, cork waste or straw is soaked in sulphite cellulose liquor and then carbonised to obtain an active charcoal.

LATEST NOTIFICATIONS.

214,581. Apparatus for the continuous manufacture of absolute alcohol. Soc. Ricard, Allenet, et Cie. April 16, 1923.

214,628. Manufacture of new arsenic compounds of the aromatic series. Cassella and Co., Ltd. April 17, 1923.

214,629. Manufacture of dyestuffs capable of being chromed. Society of Chemical Industry in Basle. April 19, 1923.

214,652. Process and apparatus of carrying out chemical reactions. Slatineanu, E. April 19, 1923.

Specifications Accepted, with Date of Application

194,314. Smelting and electrolysing processes. R. Rodrian. March 3, 1922.

198,661. Distillation of solid or liquid substances, Apparatus for. H. Dupuy. May 30, 1922.

206,488. Dyestuffs of the azine group, Manufacture of. Soc. Anon. des Matieres Colorantes et Produits Chimiques de Saint-Denis, A. Wahl, and R. Lantz. October 31, 1922.

207,488. Purifying gases, Process and apparatus for. Koppers Co. November 24, 1922.

210,399. Fertilisers, Manufacture of. Soc. Chimique de la Grande Paroisse. (Azote et Produits Chimiques). January 24, 1923.

213,754. Gas from coal or from coal and oil, Manufacture of. E. Neath. January 11, 1923.

213,946. Oils, Method of treating. G. E. Heyl. September 7, 1923.

213,984–5–6. Alcohols free from water, such as absolute alcohol, Process and apparatus for obtaining. E. C. R. Marks. (*U.S. Industrial Alcohol Co.*). January 11, 1923.

213,991. Synthetic menthol, Manufacture of. Howards and Sons, Ltd., and J. W. Blagden. January 12, 1923.

214,020. Electrolysers. Mather and Platt, Ltd., and S. F. Barclay. January 31, 1923.

214,112. Cellulose acetate fibres, Dyeing of. Morton Sundour Fabrics, Ltd., and W. Kilby. May 28, 1923.

Applications for Patents

Battiscombe, C. A. Apparatus for drying china clay, etc. 9884 April 22.

Cassella and Co., Ges., L., and Ransford, R. B. Dichlor-*N*-dihydro 1, 2, 2^1, 1^1, anthraquinoneazine. 10,000. April 22.

Chloride Electrical Storage Co., Ltd., and Dean H. Hydro meters. 9,987. April 22.

Dubois, A. Production of hydrocyanic acid. 10,100. April 23.

Dubois, A. Production of hydrocyanic acid. 10,101. April 23. (Germany, April 23, 1923.)

Electrolytic Zinc Co. of Australasia, Ltd. Recovery of zinc by electrolysis. 9,947. April 22. (Australia, April 21, 1923.)

Elektro-Osmose Akt.-Ges. (Graf Schwerin Ges.). Manufacture of amorphous silicic acid. 10,365. April 26. (Germany, April 26, 1923.)

Gustafsson, E. G. T. Methods of producing volatile metals from their sulphides. 10,152. April 24. (Sweden, April 25, 1923.)

Ledoga Soc. Anon. and Maimeri, C. Preparation of diethyl-sulphate from ethylene. 10,105. April 23. (Italy, April 23, 1923.)

Naamlooze Vennootschap Koninklijke Stearine Kaarsenfabriek Gouda. Manufacture of soap. 10,205. April 24. (Holland, Aug. 30, 1923.

Pyzel, D. Fractional distillation of oils, etc. 9,993. April 22.

Pyzel, D. Fractionating oil vapours. 9,994. April 22.

Scottish Dyes, Ltd., Thomas, A. H., and Thomson, R. F. Dyeing processes. 10,176. April 24.

Soc. Alsacienne de Produits Chimiques. Manufacture of sulphurized compounds of phenol, etc. 10,366. April 26. (France, April 27, 1923.)

Soc. of Chemical Industry in Basle. Manufacture of arylidoquinones. 10,212. April 24. (Switzerland, April 24, 1923.)

Talbot, B. Metallurgical furnaces. 10,210. April 24.

Wittig, A. Method of producing metallic vanadium. 10,357. April 26. (Germany, May 7, 1923.)

Strength of T.N.T.

TRINITROTOLUENE is made by the direct nitration of toluene by a mixture of nitric and sulphuric acids. The exact procedure varies, but the product, where Grade I of T.N.T. is desired, is similar, and consists largely of material that has a melting and setting point of 80.6° C.

The purification consists of draining off the liquid portions, including the acid and liquid nitro compounds. The mass is crushed and washed until the T.N.T. is acid-free. It may still have a low-melting point due to the presence of material of lower nitration. Other insomerides also have the same effect. The crystal mass may be washed with a solution of sodium sulphite, thiosulphate, sulphuric acid, or with an organic solvent such as alcohol, benzene, or carbon tetrachloride. Where a very pure product is desired, the T.N.T. is separated by fractional crystallisation from solution in organic solvents. In some cases the material is melted during purification. The T.N.T. is agitated as it cools to prevent solidification in a solid mass. If it forms in a solid mass, this is broken up and screened. There has been some question as to the effect of the different methods of purification on the strength and sensitiveness of T.N.T., although all methods left a product that would give satisfsctory tests. A series of experiments has recently been made by Mr. C. A. Taylor, explosives chemist, of the U.S. Bureau of Mines, and Mr. R. D. Leitch, assistant explosives chemist, to determine the strength and sensitiveness of T.N.T., using the laboratory "sand-test" bomb.

Canadian Helium Supplies

As a result of the request of the British Government a survey was commenced in Canada in 1915 with the object of determining the possibility of extracting helium on a commercial scale. As a result the gas was produced at Calgary during the war, but this has now been abandoned. At the present time the natural gas supplied to Calgary has not sufficient helium to make extraction practicable. During the past year the Mines Branch of the Department of Mines has commenced a further survey of the Canadian resources of natural gas and helium. This work has included the collection of the latest data on the helium situation. Samples of gases from new wells have already been collected and analysed by Mr. R. T. Elworthy, of the chemical division. Ontario and Alberta are the principal provinces in Canada in which natural gas occurs in commercial quantities. Several gases in Ontario have a helium content of about 0·3 per cent., especially those from Brant and Haldimand counties, but the supplies are from small wells in declining fields. The quantity of helium that might be extracted would be small. In Alberta the Bow Island field is also showing signs of exhaustion. It is thought it might be possible to extract helium in Southern Alberta to the extent of 15,000,000 cubic feet per annum, sufficient for 5 or 6 dirigibles, but the cost would be higher than in the U.S.A., where 94 per cent. gas is available.

Market Report and Current Prices

Our Market Report and Current Prices are exclusive to* THE CHEMICAL AGE, *and, being independently prepared with absolute impartiality by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., may be accepted as authoritative. The prices given apply to fair quantities delivered ex wharf or works, except where otherwise stated. The current prices are given mainly as a guide to works managers, chemists, and chemical engineers; those interested in close variations in prices should study the market report.

London, May 1, 1924.

MARKETS have been a little more active this week and there is a fair amount of inquiry. Prices generally show little change. Export demand has been a shade better but still leaves a good deal to be desired.

General Chemicals

ACETONE is steadier and the demand has considerably improved.

ACID ACETIC.—Unchanged.

ACID CITRIC continues firm and in moderate request.

ACID FORMIC is unchanged in value and in good demand.

ACID LACTIC has been in better request and price is steady.

ACID OXALIC.—The value of this article has slightly firmed up and the tendency is an improved one.

BARIUM CHLORIDE.—Scarce, and price inclined to go higher.

BLEACHING POWDER.—Unchanged.

COPPER SULPHATE.—The demand has slightly improved for British material and the price now closely approximates to that of the Continental makes.

CREAM OF TARTAR.—Firm and active.

FORMALDEHYDE has been in better demand but the price has not yet responded.

LEAD ACETATE maintains its strong position both for near and forward.

METHYL ALCOHOL is in good request without change in value.

POTASSIUM CARBONATE AND CAUSTIC have both been in slightly better demand but values are unchanged.

POTASSIUM PERMANGANATE.—Price remains steady with the demand slightly on the light side.

POTASSIUM PRUSSIATE.—Without change in value and if anything in slightly better demand.

SODIUM ACETATE continues scarce and firm.

SODIUM BICHROMATE is passing into consumption steadily at British makers' figures.

SODIUM HYPOSULPHITE.—A moderate business is reported without change in value.

SODIUM NITRITE.—Scarce and inclined to go higher.

SODIUM PHOSPHATE.—Only a small business is noted without change in value.

SODIUM PRUSSIATE has been in slightly better demand and price is steady.

SODIUM SULPHIDE is unchanged.

Coal Tar Intermediates

There has been more interest shown in this market during the last week and there is little change in values to report.

ALPHA NAPHTHOL is of fair interest for both home and export.

ALPHA NAPHTHYLAMINE has been inquired for and the price is steady.

ANILINE OIL AND SALT.—The usual business is passing.

BENZIDINE BASE.—Some home trade business has been placed.

BETA NAPHTHOL shows a fair interest, the price being unchanged.

DIMETHYLANILINE is quieter without change in value.

" H " ACID.—A fair business has been secured for the home market.

NITRO BENZOL continues to pass regularly into consumption.

PARANITRANILINE is of interest chiefly on export account, the price being without change.

" R " SALT is in fair request at recent quoted figures.

RESORCINE is without special interest.

XYLIDINE is unchanged.

Pharmaceutical Chemicals

Owing to the holidays business has been quiet this week, and consequently there are no special features to report.

ACETYL SALICYLIC ACID is in buyers' favour.

ACETANILID is easier.

ACID SALICYLIC is steadier—price unchanged.

BROMIDES are firmer, higher prices being asked for ammonia

GUAIACOL.—There has been a tendency to cut list prices for actual business.

LANOLINE AHNYDROUS is firm.

METHYL SALICYLATE.—Keen competition by English makers has brought prices to a lower level.

METOL has advanced further.

VANILLIN is very firm with an upward tendency.

Coal Tar Products

The market generally maintains its quiet tone. Most products are distinctly easy in price.

90% BENZOL is quiet at 1s. 6d. per gallon on rails.

PURE BENZOL is quiet at 1s. 11d. per gallon on rails.

CREOSOTE OIL is easy at 7½d. per gallon on rails in the North, while the price in London is from 8¼d. to 8¾d. per gallon.

CRESYLIC ACID is steady at 2s. 1d. to 2s. 2d. per gallon on rails for the pale quality 97/99%, while the dark quality 95/97%, is worth 1s. 9d. to 1s. 10d. per gallon.

SOLVENT NAPHTHA is firm at 1s. 3d. per gallon on rails.

HEAVY NAPHTHA is also firm at 1s. 2d. to 1s. 3d. per gallon on rails.

NAPHTHALENES are quiet, the low quality being worth from £6 to £7 per ton, 74/76 melting point £7 10s. to £8 per ton, and 76/78 melting point £8 10s. to £9 per ton.

PITCH is in somewhat better demand and prices are well maintained. To-day's quotations are 60s. to 62s. 6d. f.o.b. London, 57s. 6d. to 60s. f.o.b. East Coast, 55s. to 57s. 6d. f.o.b. West Coast.

Sulphate of Ammonia

Sulphate of ammonia is unchanged. The demand is satisfactory.

Lead–Zinc Separation by Volatilisation

FROM the study of available statistical data obtained by Mr. G. L. Oldright (hydrometallurgist, U.S. Department of the Interior, in Serial 2544, just issued by the Bureau of Mines) it would seem that the price of lead will remain high for years to come. It would appear, then, that there is an excellent field open for the use of the volatilisation process in the treatment of these ores. Zinc retort plants will find this process particularly suitable for the removal of lead from their concentrates before sending them to the retorts, for the formation of insoluble zinc compounds, which is supposed to take place at temperatures much above 700° C., will not affect the operation of plants of this type. A zinc retort plant already equipped (perhaps through being associated with plants making other products) with kilns, dust chambers, and bag-houses, would find the volatilisation process particularly easy to install, as it would have nearly all the necessary equipment.

Reduction and Carburisation in Iron Smelting

THE purpose of an investigation of reduction and carburisation in iron smelting, being conducted by the U.S. Department of the Interior at the Seattle Experimental Station of the Bureau of Mines, is to determine the chemical reactions occurring in the process of producing pig iron, especially in the electric furnace. Previous work done at this station on the preparation of sponge iron and also on the carburisation of iron to produce synthetic pig iron have brought out some interesting and valuable conclusions regarding the chemistry involved in the production of pig iron. In this study such work will be continued with the hope of definitely establishing all of the conditions required for reduction or iron ores and carburisation of iron to produce pig iron.

Current Market Prices

General Chemicals

	Per	£	s.	d.		£	s.	d.
Acetic anhydride, 90–95%	lb.	0	1	4	to	0	1	5
Acetone oil	ton	80	0	0	to	85	0	0
Acetone, pure	ton	102	10	0	to	105	0	0
Acid, Acetic, glacial, 99–100%	ton	71	0	0	to	73	0	0
Acetic, 80% pure	ton	48	10	0	to	49	0	0
Acetic, 40% pure	ton	25	0	0	to	25	10	0
Arsenic, liquid, 2000 s.g.	ton	85	0	0	to	88	0	0
Boric, commercial	ton	48	0	0	to	52	0	0
Carbolic, cryst. 39–40%	lb.	0	0	7½	to	0	0	8
Citric	lb.	0	1	5½	to	0	1	6
Formic, 85%	ton	63	0	0	to	64	0	0
Hydrofluoric	lb.	0	0	7	to	0	0	8
Lactic, 50 vol.	ton	37	0	0	to	39	0	0
Lactic, 60 vol.	ton	43	0	0	to	45	0	0
Nitric, 80 Tw.	ton	23	0	0	to	25	0	0
Oxalic	lb.	0	0	5¼	to	0	0	5½
Phosphoric, 1.5	ton	35	0	0	to	38	0	0
Pyrogallic, cryst.	lb.	0	5	9	to	0	6	0
Salicylic, technical	lb.	0	1	9½	to	0	2	0
Sulphuric, 92–93%	ton	6	0	0	to	7	0	0
Tannic, commercial	lb.	0	2	0	to	0	2	3
Tartaric	lb.	0	1	1½	to	0	1	2
Alum, lump	ton	12	10	0	to	13	0	0
Chrome	ton	23	0	0	to	24	0	0
Alumino ferric	ton	7	0	0	to	7	5	0
Aluminium, sulphate, 14–15%	ton	7	10	0	to	8	10	0
Sulphate, 17–18%	ton	8	10	0	to	9	10	0
Ammonia, anhydrous	lb.	0	1	6	to	0	1	8
.880	ton	32	0	0	to	34	0	0
.920	ton	22	0	0	to	24	0	0
Carbonate	ton	30	0	0	to	32	0	0
Chloride	ton	50	0	0	to	55	0	0
Muriate (galvanisers)	ton	32	0	0	to	33	0	0
Nitrate (pure)	ton	40	0	0	to	45	0	0
Phosphate	ton	63	0	0	to	65	0	0
Sulphocyanide, commercial 90%	lb.	0	1	5	to	0	1	6
Amyl acetate, technical	ton	280	0	0	to	300	0	0
Arsenic, white powdered	ton	63	0	0	to	65	0	0
Barium, carbonate, Witherite	ton	5	0	0	to	6	0	0
Carbonate, Precip.	ton	15	0	0	to	16	0	0
Chlorate	ton	65	0	0	to	70	0	0
Chloride	ton	14	0	0	to	14	10	0
Nitrate	ton	37	0	0	to	40	0	0
Sulphate, blanc fixe, dry	ton	20	10	0	to	21	0	0
Sulphate, blanc fixe, pulp	ton	10	5	0	to	10	10	0
Sulphocyanide, 95%	lb.	0	0	11	to	0	1	0
Bleaching powder, 35–37%	ton	10	0	0	to	10	10	0
Borax crystals, commercial	ton	25	0	0	to	—		
Calcium acetate, Brown	ton	13	0	0	to	14	0	0
Grey	ton	19	10	0	to	20	10	0
Carbide	ton	13	0	0	to	13	10	0
Chloride	ton	5	15	0	to	6	0	0
Carbon bisulphide	ton	35	0	0	to	40	0	0
Casein technical	ton	80	0	0	to	90	0	0
Cerium oxalate	lb.	0	3	0	to	0	3	6
Chromium acetate	lb.	0	1	1	to	0	1	3
Cobalt acetate	lb.	0	6	0	to	0	6	6
Oxide, black	lb.	0	9	6	to	0	10	0
Copper chloride	lb.	0	1	1	to	0	1	2
Sulphate	ton	24	0	0	to	24	10	0
Cream Tartar, 98–100%	ton	82	0	0	to	85	0	0
Epsom salts (*see* Magnesium sulphate)								
Formaldehyde, 40% vol.	ton	63	0	0	to	65	0	0
Formusol (Rongalite)	lb.	0	1	11	to	0	2	0
Glauber salts commercial	ton	4	0	0	to	4	10	0
Glycerin crude	ton	65	0	0	to	67	10	0
Hydrogen peroxide, 12 vols.	gal	0	1	10	to	0	2	0
Iron perchloride	ton	20	0	0	to	22	0	0
Sulphate (Copperas)	ton	3	10	0	to	4	0	0
Lead acetate, white	ton	49	10	0	to	50	0	0
Carbonate (White Lead)	ton	50	0	0	to	52	0	0
Nitrate	ton	44	10	0	to	45	0	0
Litharge	ton	50	0	0	to	51	0	0
Lithophone, 30%	ton	22	10	0	to	23	0	0
Magnesium chloride	ton	4	0	0	to	4	5	0
Carbonate, light	cwt.	2	10	0	to	2	15	0
Sulphate (Epsom salts commercial)	ton	5	15	0	to	6	0	0
Sulphate (Druggists')	ton	9	0	0	to	10	0	0
Manganese Borate, commercial	ton	65	0	0	to	75	0	0
Sulphate	ton	45	0	0	to	48	0	0
Methyl acetone	ton	82	0	0	to	85	0	0
Alcohol, 1% acetone	ton	85	0	0	to	86	0	0
Nickel sulphate, single salt	ton	37	0	0	to	38	0	0
Ammonium sulphate, double salt	ton	37	0	0	to	38	0	0
Potash, Caustic	ton	32	0	0	to	33	0	0
Potassium bichromate	lb.	0	0	5¾	to	—		
Carbonate, 90%	ton	30	0	0	to	31	0	0
Chloride, 80%	ton	9	0	0	to	10	0	0
Chlorate	lb.	0	0	3½	to	—		
Metabisulphite, 50–52%	ton	63	0	0	to	65	0	0
Nitrate, refined	ton	38	0	0	to	40	0	0
Permanganate	lb.	0	0	8	to	0	0	8½
Prussiate, red	lb.	0	1	10	to	0	2	0
Prussiate, yellow	lb.	0	0	8½	to	0	0	9
Sulphate, 90%	ton	10	0	0	to	10	10	0
Salammoniac, firsts	cwt.	2	15	0	to	—		
Seconds	cwt.	2	17	6	to	—		
Sodium acetate	ton	25	0	0	to	25	10	0
Arsenate, 45%	ton	45	0	0	to	48	0	0
Bicarbonate	ton	10	10	0	to	11	0	0
Bichromate	lb.	0	0	4½	to	—		
Bisulphite, 60–62%	ton	20	0	0	to	22	0	0
Chlorate	lb.	0	0	2¾	to	0	0	3
Caustic, 70%	ton	17	10	0	to	18	0	0
Caustic, 76%	ton	18	10	0	to	19	0	0
Hydrosulphite, powder	lb.	0	1	6	to	0	1	7
Hyposulphite, commercial	ton	10	0	0	to	10	10	0
Nitrite, 96–98%	ton	29	0	0	to	30	0	0
Phosphate, crystal	ton	15	10	0	to	16	0	0
Perborate	lb.	0	0	11	to	0	1	0
Prussiate	lb.	0	0	5½	to	0	0	6
Sulphide, crystals	ton	8	10	0	to	9	0	0
Sulphide, solid, 60–62%	ton	15	0	0	to	16	10	0
Sulphite, cryst.	ton	11	10	0	to	12	0	0
Strontium carbonate	ton	50	0	0	to	55	0	0
Nitrate	ton	50	0	0	to	55	0	0
Sulphate, white	ton	6	10	0	to	7	10	0
Sulphur chloride	ton	25	0	0	to	27	10	0
Flowers	ton	11	0	0	to	11	10	0
Roll	ton	9	15	0	to	10	10	0
Tartar emetic	lb.	0	1	0	to	0	1	1
Tin perchloride, 33%	lb.	0	1	4	to	0	1	5
Perchloride, solid	lb.	0	1	5	to	0	1	6
Protochloride (tin crystals)	lb.	0	1	8	to	0	1	10
Zinc chloride 102° Tw.	ton	20	0	0	to	21	0	0
Chloride, solid, 96–98%	ton	25	0	0	to	30	0	0
Oxide, 99%	ton	42	0	0	to	45	0	0
Dust, 90%	ton	50	0	0	to	55	0	0
Sulphate	ton	14	0	0	to	15	0	0

Pharmaceutical Chemicals

Acetyl salicylic acid	lb.	0	3	5	to	0	3	9
Acetanilid	lb.	0	2	4	to	0	2	6
Acid, Gallic, pure	lb.	0	3	0	to	0	3	3
Lactic, I.21	lb.	0	2	9	to	0	3	0
Salicylic, B.P.	lb.	0	1	10	to	0	2	0
Tannic, leviss.	lb.	0	3	0	to	0	3	3
Amidol	lb.	0	8	6	to	0	9	0
Amidopyrin	lb.	0	13	6	to	0	14	0
Ammon ichthosulphonate	lb	0	1	10	to	0	2	0
Barbitone	lb.	0	16	0	to	0	16	6
Beta naphthol resublimed	lb.	0	3	6	to	0	4	0
Bromide of ammonia	lb	0	0	11	to	0	1	0
Potash	lb.	0	0	8	to	0	0	8½
Soda	lb.	0	0	8½	to	0	0	9
Caffeine, pure	lb.	0	12	0	to	0	12	6
Calcium glycerophosphate	lb.	0	5	9	to	0	6	0
Lactate	lb.	0	1	6	to	0	1	9
Calomel	lb.	0	4	0	to	0	4	3
Chloral hydrate	lb.	0	3	10	to	0	4	0
Cocaine alkaloid	oz.	1	1	0	to	1	2	6
Hydrochloride	oz.	0	17	0	to	0	17	6
Corrosive sublimate	lb.	0	3	5	to	0	3	7
Eucalyptus oil, B.P. (70–75% eucalyptol)	lb.	0	2	0	to	0	2	2
B.P. (75–80% eucalyptol)	lb.	0	2	1	to	0	2	3
Guaiacol carbonate	lb.	0	12	6	to	0	12	9
Liquid	lb.	0	11	0	to	0	11	6
Pure crystals	lb.	0	12	0	to	0	12	6
Hexamine	lb.	0	3	9	to	0	4	0
Hydroquinone	lb.	0	4	6	to	0	5	0
Lanoline anhydrous	lb.	0	0	8	to	0	0	9
Lecithin ex ovo	lb.	1	5	0	to	1	7	6
Lithi carbonate	lb.	0	9	6	to	0	10	0
Methyl salicylate	lb.	0	2	6	to	0	2	9
Metol	lb.	0	10	6	to	0	12	6
Milk sugar	cwt.	4	0	0	to	4	5	0
Paraldehyde	lb.	0	1	5	to	0	1	7
Phenacetin	lb.	0	6	9	to	0	7	0
Phenazone	lb.	0	7	9	to	0	8	3
Phenolphthalein	lb.	0	7	3	to	0	7	6
Potassium sulpho guaiacolate	lb.	0	6	3	to	0	6	9
Quinine sulphate, B.P.	oz.	0	2	3	to	—		

	Per	£	s.	d.		£	s.	d.
Resorcin, medicinal	lb.	0	5	6	to	0	6	0
Salicylate of soda powder	lb.	0	2	6	to	0	2	9
Crystals	lb.	0	2	9	to	0	3	0
Salol	lb.	0	4	0	to	0	4	3
Soda Benzoate	lb.	0	3	0	to	0	3	3
Sulphonal	lb.	0	16	6	to	0	17	0
Terpene hydrate	lb.	0	1	9	to	0	2	0
Theobromine, pure	lb.	0	12	0	to	0	12	3
Soda salicylate	lb.	0	8	6	to	0	9	0
Vanillin	lb.	1	5	0	to	1	7	6

Coal Tar Intermediates, &c.

Alphanaphthol, crude	lb.	0	1	9	to	0	2	0
Refined	lb.	0	2	3	to	0	2	6
Alphanaphthylamine	lb.	0	1	6½	to	0	1	7
Aniline oil, drums extra	lb.	0	0	8½	to	0	0	8½
Salts	lb.	0	0	9	to	0	0	9½
Anthracene, 40–50%	unit	0	0	8½	to	0	0	9
Benzaldehyde (free of chlorine)	lb.	0	2	9	to	0	3	0
Benzidine, base	lb.	0	4	4	to	0	4	7
Sulphate	lb.	0	3	4	to	0	3	7
Benzoic acid	lb.	0	2	0	to	0	2	3
Benzyl chloride, technical	lb.	0	2	0	to	0	2	3
Betanaphthol	lb.	0	1	1	to	0	1	2
Betanaphthylamine, technical	lb.	0	4	0	to	0	4	3
Croceine Acid, 100% basis	lb.	0	3	3	to	0	3	6
Dichlorbenzol	lb.	0	0	9	to	0	0	10
Diethylaniline	lb.	0	4	6	to	0	4	9
Dinitrobenzol	lb.	0	1	1	to	0	1	2
Dinitrochlorbenzol	lb.	0	0	10	to	0	0	11
Dinitronaphthalene	lb.	0	1	4	to	0	1	5
Dinitrotoluol	lb.	0	1	3	to	0	1	4
Dinitrophenol	lb.	0	1	6	to	0	1	7
Dimethylaniline	lb.	0	2	8	to	0	2	10
Diphenylamine	lb.	0	3	0	to	0	3	3
H-Acid	lb.	0	4	3	to	0	4	6
Metaphenylenediamine	lb.	0	4	0	to	0	4	3
Monochlorbenzol	lb.	0	0	10	to	0	1	0
Metanilic Acid	lb.	0	5	9	to	0	6	0
Metatoluylenediamine	lb.	0	4	0	to	0	4	3
Monosulphonic Acid (2.7)	lb.	0	8	6	to	0	9	6
Naphthionic acid, crude	lb.	0	2	4	to	0	2	6
Naphthionate of Soda	lb.	0	2	4	to	0	2	6
Naphthylamine-di-sulphonic-acid	lb.	0	4	0	to	0	4	3
Neville Winther Acid	lb.	0	7	3	to	0	7	9
Nitrobenzol	lb.	0	0	7	to	0	0	8
Nitronaphthalene	lb.	0	0	11½	to	0	1	0
Nitrotoluol	lb.	0	0	8	to	0	0	9
Orthoamidophenol base	lb.	0	12	0	to	0	12	6
Orthodichlorbenzol	lb.	0	1	0	to	0	1	1
Orthotoluidine	lb.	0	0	10	to	0	0	11
Orthonitrotoluol	lb.	0	0	3	to	0	0	4
Para-amidophenol, base	lb.	0	8	6	to	0	9	0
Hydrochlor	lb.	0	7	6	to	0	8	0
Paradichlorbenzol	lb.	0	0	9	to	0	0	10
Paranitraniline	lb.	0	2	6	to	0	2	8
Paranitrophenol	lb.	0	2	3	to	0	2	6
Paranitrotoluol	lb.	0	2	9	to	0	3	0
Paraphenylenediamine, distilled	lb.	0	12	0	to	0	12	6
Paratoluidine	lb.	0	5	6	to	0	5	9
Phthalic anhydride	lb.	0	2	6	to	0	2	9
Resorcin technical	lb.	0	4	0	to	0	4	3
Sulphanilic acid, crude	lb.	0	0	9	to	0	0	10
Tolidine, base	lb.	0	7	3	to	0	7	9
Mixture	lb.	0	2	6	to	0	2	9

Essential Oils and Synthetics

Essential Oils.		£	s.	d.
Anise	c.i.f. 2/10 spot	0	2	8
Bay		0	10	6
Bergamot		0	18	0
Cajuput		0	3	3
Camphor, white	per cwt.	3	10	0
Brown	„	3	10	0
Cassia	easier, c.i.f. 7/0, spot	0	8	0
Cedarwood		0	1	9
Citronella (Ceylon)	firm, c.i.f. 3/3, spot	0	3	6
(Java)	firm and dearer, c.i.f. 4/7, spot	0	4	11
Clove		0	8	6
Eucalyptus	easier	0	2	1
Geranium Bourbon	very firm	1	13	0
Lavender		1	5	0
Lavender Spike		0	6	0
Lemon		0	3	6
Lemongrass	per oz.	0	0	2½
Lime (distilled)		0	5	0
Orange sweet (Sicilian)		0	12	9
(West Indian)		0	9	6
Palmarosa		0	18	0
Peppermint (American)		1	1	0
Mint (dementholised Japanese)		0	18	0
Patchouli		1	2	6
Otto of Rose	per oz.	1	15	0
Rosemary		0	1	9
Sandalwood		1	5	0
Sassafras		0	10	0
Thyme	4/6 to	0	5	6
Synthetics.				
Benzyl acetate	per lb.	0	3	6
Benzoate	„	0	3	6
Citral	„	0	10	0
Coumarine	„	1	0	0
Heliotropine	„	0	8	0
Ionone	„	1	5	0
Linalyl acetate	dearer „	1	12	6
Methyl salicylate	„	0	2	6
Musk xylol	„	1	0	0
Terpeniol	„	0	2	9

Canadian Mineral Production Increased in 1923

In a report issued by the Dominion Bureau of Statistics it is stated that the mineral production of Canada advanced about 12 per cent. in 1923 to a total of $214,102,000, as compared with $184,297,242 in 1922, and the record value of $227,859,665 attained in 1920. It is pointed out that commodity prices, which reached a peak in 1920, have since receded, and this fact must be borne in mind when production is computed in terms of values. New output records were established for coal, lead, zinc, asbestos and the total value of cobalt. Copper production was more than double the tonnage produced in 1922, and nickel increased practically three and one-half times. Gold and silver were slightly lower than in 1922. A group of non-metallic minerals, including about twenty commodities, increased two million dollars to a total of $19,000,000. Structural materials and clay products, including Portland cement, showed little change in the aggregate value, the total for the year being estimated at 38·9 million dollars. Employment in metal mining industries increased approximately 27 per cent. to a maximum at the close of the year, and all mining industries, considered as a group, showed a gain of 6 per cent. during the year.

International Congress of Refrigeration

So close is the mutual relationship of bio-chemistry and refrigeration that the Fourth International Congress of Refrigeration, which is to be held in London from June 16 to 21, under the presidency of Sir Gordon H. Campbell, K.B.E., will discuss a number of specially contributed papers on the various phases of this subject. The features of this Congress comprise a considerable number of trips, free to members, to refrigerating establishments and other sights, such as the National Physical Laboratory at Teddington, the Port of London Docks, Bristol, Southampton, Liverpool and Manchester, to which the railway companies are granting a free Congress trip, and the leading shipping companies are entertaining the members on vessels in dock. A large volume of Congress Proceedings, of great interest, will be supplied afterwards to members.

Particulars relating to membership may be obtained on application to Mr. J. Raymond, Hon. Secretary-General, Fourth International Congress of Refrigeration, Weavers' Hall, 22, Basinghall Street, London, E.C.2.

American Synthetic Ammonia

After several years of experimental work, the Mathieson Alkali Works has started the first unit in the manufacture of synthetic ammonia at its Niagara Falls plant. The company is now installing additional units that will give a yearly producing capacity of over 5,000,000 lb. The Mathieson process embraces the utilisation of free hydrogen generated by the company's electrolytic alkali cells and which has previously been lost. The utilisation of this hydrogen will enable the company to produce high grade ammonia at as low a cost as anywhere in the world, they claim. The process is said to be the only strictly American method now in use for the production of synthetic ammonia, and uses all American made machinery and equipment. It is understood that the Mathieson process will be installed in plants of other companies where hydrogen is produced, and the ammonia will be marketed by the Mathieson company in addition to its own product made at Niagara Falls.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, May 1, 1924.

THE heavy chemical market continues quiet, what little inquiry there is being for small quantities only.

Prices both of Continental and Home products are on about the same level as last reported.

Industrial Chemicals

ACID ACETIC.—Prices remain unchanged. Glacial, 98/100% £62 to £70 per ton; 80% pure, £50 to £53 per ton 80% technical, £47 to £50 per ton. All packed in casks delivered c.i.f. U.K. port, duty free.

ACID BORACIC.—Crystals or granulated, £48 per ton; powdered, £50 per ton, carriage paid U.K. stations, minimum ton lots.

ACID CARBOLIC, ICE CRYSTALS.—Price advanced to 8¼d. per lb. carriage paid. Moderate inquiry.

ACID CITRIC, B.P. CRYSTALS.—Quoted 1s. 6d. per lb., less 5% ex store. Slightly cheaper offers for forward delivery.

ACID FORMIC 85%.—Quoted £63 to £64 per ton, ex store. Offered for early delivery at about £62 per ton c.i.f. U.K. port.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC 80°.—£23 10s. per ton, ex station, full truck loads.

ACID OXALIC.—Unchanged at about 5½d. per lb., ex store, spot delivery. Offered from the Continent at about 5d. per lb. c.i.f. U.K. port.

ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Moderate inquiry. Spot material quoted 1s. 1¼d. per lb., less 5%, ex store.

ALUMINA SULPHATE, 17/18% IRON FREE.—Quoted £8 2s. 6d. per ton, ex store, spot delivery.

ALUM CHROME.—Ammonium chrome alum quoted £19 to £21 per ton according to quality, f.o.b. U.K. port. Potash chrome alum about £26 per ton, ex store or station.

ALUM POTASH (LUMP).—Spot material now quoted £10 17s. 6d. per ton, ex store. Slightly dearer quotations from the Continent. Quoted £9 5s. per ton c.i.f. U.K. port. Crystal potash alum quoted £8 15s. per ton, ex wharf, prompt shipment from the Continent.

AMMONIA ANHYDROUS.—Unchanged at about 1s. 5½d. per lb., ex station, prompt delivery.

AMMONIA CARBONATE.—Lump, £37 per ton. Powdered, £39 per ton, packed in 5 cwt. casks delivered U.K.

AMMONIA LIQUID, 880°.—Unchanged at 2¼d. to 3d. per lb. delivered, according to quantity. Containers extra.

AMMONIA MURIATE.—Grey galvanisers quality on offer at £30 per ton, ex station or delivered f.o.b U.K. port. Fine white crystals offered from the Continent at about £25 15s. per ton c.i.f. U.K. port.

AMMONIA SULPHATE.—25¼%, £13 12s. per ton; 25¾% quality, £14 15s. per ton, ex works, prompt delivery.

ARSENIC, WHITE POWDERED.—Quoted £63 to £64 per ton, ex wharf, spot delivery; offered for early delivery at slightly less.

BARIUM CHLORIDE, 98/100%.—English make about £14 to £14 5s. per ton, ex store. On offer from the Continent at £13 5s. per ton, c.i.f. U.K. port.

BARYTES.—Finest English white quoted £5 5s. per ton, ex works; Continental about £5 per ton, c.i.f. U.K. port.

BLEACHING POWDER.—Spot lots, £11 per ton, ex station. Contracts 20s. per ton less.

BORAX.—Granulated, £24 10s. per ton; crystal, £25 per ton; powdered, £26 per ton, carriage paid U.K. stations, minimum ton lots.

CALCIUM CHLORIDE.—English material unchanged at £5 12s. 6d. per ton, ex station. Continental inclined to be dearer at about £4 12s. 6d. per ton, c.i.f. U.K. port.

COPPERAS, GREEN.—Unchanged at about £2 5s. per ton, f.o.b. U.K. port in bulk. Quoted £3 5s. to £3 10s. per ton, in casks.

COPPER SULPHATE.—Unchanged at about £25 per ton, ex store. Spot lots of Continental material on offer at slightly less.

FORMALDEHYDE, 40%.—Unchanged at about £63 per ton, ex store, spot delivery.

GLAUBER SALTS.—English material quoted £4 per ton, ex store or station. Continental advanced to about £3 7s. 6d. per ton, c.i.f. U.K. port.

LEAD, RED.—Offered from the Continent at about £39 per ton, c.i.f. U.K. port. Spot lots quoted £41 per ton, ex store.

LEAD, WHITE.—Quoted £42 to £43 per ton, ex store, spot delivery.

LEAD, ACETATE.—White crystals now quoted £47 to £47 5s. per ton, ex store; brown about £1 per ton less; white crystals offered from the Continent at about £45 17s. 6d. per ton, c.i.f. U.K. port.

MAGNESITE CALCINED.—English ground material offered at £8 per ton, ex station. Moderate inquiry for export.

MAGNESIUM CHLORIDE.—Continental quotations dearer. Quoted £3 10s. per ton, c.i.f. U.K. port. Spot lots on offer at about £4 per ton, ex store.

MAGNESIUM SULPHATE (EPSOM SALTS).—English material, commercial quality, on offer at about £5 per ton, ex store. B.P. quality quoted £6 5s. per ton, ex station. Commercial quality offered from the Continent at about £3 12s. 6d. per ton, c.i.f. U.K. port.

POTASH CAUSTIC, 88/92%.—Offered from the Continent at about £30 10s. per ton, ex wharf. Spot lots quoted £32 per ton, ex store.

POTASSIUM BICHROMATE.—Unchanged at 5¾d. per lb., delivered.

POTASSIUM CARBONATE, 96/98%.—Quoted £24 per ton, c.i.f. U.K. port. Spot lots about £27 per ton, ex store. 90/94% quality about £23 per ton, c.i.f. U.K. port.

POTASSIUM CHLORATE.—Little inquiry. Offered at 3¼d. per lb., ex store, spot delivery.

POTASSIUM NITRATE (SALTPETRE).—Quoted £27 15s. per ton, c.i.f. U.K. port. Spot lots unchanged at about £31 per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Unchanged at 9d. per lb., ex. store, spot delivery.

POTASSIUM PRUSSIATE (YELLOW).—English material quoted 8½d. per lb., f.o.b., U.K. port. Offered for spot delivery at about the same price ex store.

SODA CAUSTIC.—76/77%, £19 7s. 6d. per ton; 70/72%, £17 17s. 6d. per ton; 60/62% broken, £19 2s. 6d. per ton; 98/99% powdered, £22 15s. per ton. All ex station, spot delivery. Contracts 20s. per ton less.

SODIUM ACETATE.—Offered from the Continent at £23 per ton, c.i.f. U.K. port. Spot lots quoted £25 per ton ex store.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—English makers' price unchanged at 4½d. per lb., D/d.

SODIUM CARBONATE.—Soda crystals, £5 to £5 5s. per ton, ex quay or station. Alkali, 58%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—English material quoted £10 per ton, ex station. Continental on offer at slightly less. Pea crystals of English manufacture quoted £14 10s. per ton, ex station.

SODIUM NITRATE.—Refined, 96/98% quality, unchanged at £13 10s. to £13 15s. per ton, f.o.r. or f.o.b. U.K. port.

SODIUM NITRATE, 100%.—Moderate inquiry. Price about £28 per ton, f.o.b. U.K. port.

SODIUM PRUSSIATE (YELLOW).—British material offered for export at about 4¾d. per lb., f.o.b. U.K. ports. Continental on offer at about the same price, c.i.f. U.K. port.

SODIUM SULPHATE (SALTCAKE).—Price for home consumption £4 5s. per ton, carriage paid stations. Good export inquiry.

SODIUM SULPHIDE.—60/65% solid, English make £14 15s. per ton, ex station; broken £1 per ton more; flake, £2 per ton more; 60/62% solid, offered from the Continent at £12 17s. 6d. per ton, c.i.f. U.K. port; broken, £1 per ton more; 31/34% crystals, English make, £9 2s. 6d. per ton, ex station. 30/32% Crystals, Continental make, £8 17s. 6d. per ton, c.i.f. U.K. port.

SULPHUR.—Flowers, £10 per ton; roll, £9 per ton; rock, £9 per ton; ground, £8 per ton. Prices nominal.

ZINC CHLORIDE, 98/100%.—Quoted £26 10s. per ton, f.o.b. U.K. port.

ZINC SULPHATE.—English material about £13 10s. per ton, ex store. Offered from the Continent at £11 7s. 6d. per ton, c.i.f. U.K. port.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

Coal Tar Intermediates and Wood Distillation Products

ALPHA NAPHTHOL.—Export inquiry. Price 2s. 4½d. lb., f.o.b.

BRONNERS ACID.—Export inquiry. Price 7s. 4d. lb., 100% basis.

CHICAGO ACID.—Some export inquiry. Price 14s. 3d. lb., 100% basis.

CASSELLA F. ACID.—Some export inquiry. Price 9s. 6d. lb., 100% basis.

DE FREUNDS ACID.—Export inquiry. Price 5s. 2d. lb., 100% basis.

DIANISIDINE BASE.—Export inquiries. Price 22s. 6d. lb., 100% basis, f.o.b.

DINITROTOLUOL.—Export inquiry. Price 11¼d. lb., f.o.b.

G. SALT.—Export inquiry. Price 3s. 10½d. lb., 100% basis.

LAURENTS ACID.—Export inquiry. Price 3s. 3d. lb., 100% basis.

NAPHTHIONIC ACID.—Small home inquiry. Price 2s. 5d. lb., 100% basis, delivered.

ORTHO TOLUIDINE.—Small export inquiry. Price 8d. lb., drums included.

PHENYL PERI ACID.—Some export inquiry. Price 5s. 9d. lb., 100% basis.

PARA AMIDOACETANILIDE.—Moderate home demand. Price, 5s. 3d. lb., 100% basis, delivered.

PARANITRANILINE.—Good home demand. Price, 2s. 3½d. lb., delivered.

PARA TOLUIDINE.—Small export inquiry. Price, 4s. 2d. lb., f.o.b.

PARA NITRO ORTHO TOLUIDINE.—Supplies are offered at 5s. 6d. lb., 100% basis.

R. SALT.—Some export inquiry. Price, 2s. 7d. lb., 100% basis.

S. ACID.—Export inquiry. Price, 12s. 1d. lb., 100% basis.

TOBIAS ACID.—Export inquiry, 5s. 3d. lb., 100% basis.

Chemical Trade Inquiries

The following inquiry, abstracted from the "Board of Trade Journal," has been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the name and address of the inquirer by applying to the Department (quoting the reference number and country).

GLYCERINE AND RAW PRODUCTS.—A commission agent in Santiago, Chile, is desirous of representing British firms manufacturing glycerine and raw products, such as oils, used by soap manufacturers. (Reference No. 494.)

Discovery of Calcium Sulphate Beds

THE discovery has been made that an extensive bed of anhydrite (calcium sulphate) exists under the Warren Cement Works at Hartlepool. Sinking operations have been proceeded with, and, as a water-bearing strata has to be passed through, it has been decided to steel pile that part of the shaft, and thus avoid heavy pumping or costly freezing operations. The first set of piles are in position, and it is hoped that anhydrite will be mined towards the end of the year. Considerable quantities of this material are required by Synthetic Ammonia and Nitrates Co., Ltd., at Billingham, for the manufacture of certain of their products, and arrangements have been made to supply them with the mineral. Their requirements, it is anticipated, will ultimately reach 50,000 tons per annum. The Hartlepool Cement Co. has in view other uses for the anhydrite, and further developments may be expected. The new undertaking will afford employment for a considerable number of men.

The Manchester Chemical Market

[FROM OUR OWN CORRESPONDENT.]

Manchester, May 1, 1924

BUSINESS on the Manchester chemical market this week has been on quiet lines. Although inquiries are being received both from home users and from abroad, little actual fresh business is reported. Home trade buyers still show marked reluctance to commit themselves forward. Taking prices generally, very few sections may be described as strong; many of them are certainly steady, but, on the other hand, others are distinctly easy and continue to move in favour of buyers.

Heavy Chemicals

Sulphide of sodium still meets with only a moderate demand, but values are about unchanged at £14 15s. for 60–65 per cent. concentrated solid and £9 5s. to £9 10s. per ton for crystals. Prussiate of soda is slightly weaker again at 4¾d. per lb., buying interest remaining very small. Glauber salts are offering at £3 10s. to £3 15s. per ton, the quiet condition which has characterised this section for some considerable time continuing unbroken. Alkali is steady at £6 15s. per ton for 58 per cent. quality to home users, and a fairly good demand is being met with for both branches of trade. Caustic soda is rather active both on home trade account and for export, and values are maintained at from £16 17s. 6d. for 60 per cent. to £19 7s. 6d. for 76–77 per cent. strength. Chlorate of soda is still quoted at 2¾d. per lb., but no business of importance is being put through. Saltcake keeps steady at £4 10s. per ton; the demand, however, is still on moderate lines. Hyposulphite of soda, although only in poor inquiry, is maintained at the former quotations of £14 15s. for photographic crystals and £9 10s. to £9 15s. per ton for commercial quality. Bicarbonate of soda is quiet but steady at £10 10s. per ton. Nitrite of soda is still quoted at £28 to £28 10s. per ton, supplies of this material being on the short side. Bleaching powder is steady but only in moderate inquiry at £10 per ton. Acetate of soda is about unchanged at £23 10s. to £24 per ton, a quiet demand being met with. Phosphate of soda is inactive although perhaps steadier at £13 10s. per ton. Soda crystals are in fair request at £5 5s. per ton. Bichromate of soda is in quietly steady demand and values are held at 4½d. per lb.

Caustic potash attracts only a limited amount of attention from buyers at £29 to £30 per ton for 90 per cent. Carbonate of potash is rather quiet at £24 per ton. Yellow prussiate of potash is unchanged from the last quotation at 8½d. to 8¾d. per lb., but business is slow. Permanganate of potash continues inactive at 7½d. to 8½d. per lb. Bichromate of potash is steady and in fair demand at 5¾d. per lb. Chlorate of potash is quiet and easy at 2¾d. to 3d. per lb.

A dull market and keen competition from foreign brands are adversely affecting arsenic values; white powdered, Cornish makes, is now being quoted at round £59 per ton, Manchester. Sulphate of copper is steadier again and the demand is said to be rather better than it has been for some time; to-day's value is £24 10s. to £25 per ton, f.o.b. Grey acetate of lime is now offering at £19 per ton, although brown is fairly steady at £15. Acetate of lead is in rather short supply and values are steady; white is £49 per ton, with brown quoted at £47. Nitrate of lead is still quiet at £45 per ton. Commercial Epsom salts are steady at £4 10s. per ton for British makes, with magnesium sulphate, B.P., on offer at £6 10s.

Acids and Tar Products

Little change can be reported in the position of the acids. Tartaric acid continues in quiet demand at 1s. 1½d. per lb., with citric steady at 1s. 5½d. Acetic acid meets with a fair inquiry at £47 per ton for 80 per cent. technical and about £70 for glacial. Oxalic acid keeps very dull at 5¾d. per lb.

Coal-tar products are quiet. Carbolic acid crystals are unchanged at 8¼d. per lb. and crude at 2s. 3d. per gallon. Pitch is in very small demand at round £3 per ton, Manchester. Solvent naphtha keeps firm at 1s. 5½d. per gallon. Naphthalenes attract only small attention at £16 per ton for refined qualities and £7 and upwards for crude. Creosote oil is quiet but unchanged at 8d. per gallon.

Company News

THE LAUTARO NITRATE CO., LTD.—The annual general meeting will be held at the offices of the company, Calle Prat 231, Valparaiso, Chile, on June 30, at 10 a.m.

PAN DE AZUCAR NITRATE CO.—An interim dividend is announced at the rate of 5 per cent., less tax, on account of profits for the year ending June 30, 1924, against nil last year.

GAS PURIFICATION AND CHEMICAL CO.—The net profits for the year 1923 were £8,115, and £4,564 was brought forward. A dividend of 8 per cent. is proposed, the same as for the previous year, adding £2,500 to reserve, and writing £2,000 off capital expenditure.

NEWTON, CHAMBERS AND CO.—The net profits for 1923 were £92,942, and £43,677 was brought forward. A final dividend of 7½ per cent. is proposed on the ordinary shares, making 10 per cent. for the year, adding £30,000 to the reserve and carrying forward £45,327.

NITRATE RAILWAYS CO.—The net receipts for the year amounted to £305,431. Final dividends are recommended at the rate of 6½ per cent. on the ordinary shares, making 10 per cent. for the year, 3½ per cent. on the preferred converted ordinary shares, making 7 per cent. for the year, and a dividend of 3 per cent. on the deferred converted ordinary shares. The balance of £87,177 is carried forward.

CYPRUS ASBESTOS CO.—The result of the operations of this company for 1923, after providing for depreciation, was a loss of £27,205. This compares with a profit of £23,122 for 1922 (the first year of working). A credit balance of £7,019 was brought forward, and this leaves a debit balance of £20,187 to be carried forward. The directors state that although the year opened with fair promise it proved disappointing.

BRITISH CYANIDES CO.—The directors have informed the shareholders that, owing to adverse trading conditions, the company has been working at a loss in the last few months. Defects in the working of two new units of plant for the fixation of atmospheric nitrogen have been discovered, and both units have been closed. A new furnace is being erected, under very stringent guarantees. When there are furnaces in operation on a scale sufficient to supply the raw material necessary to keep the factories fully employed standing charges will resume their proper relationship to the turnover, and the output could be sold to produce a considerable margin of profit even at the low prices now ruling, but for the erection of furnaces on this scale further capital will be required. The board add that during the last few months a new chemical product, which should replace one that is now used on a large scale in the motor tyre and other rubber industries, has been manufactured at the works, and it is expected that a highly profitable business will result.

Catalogues Received

A SHORT digest of the features of the "Meldrum" furnace is given, with illustrations of various parts, in a leaflet entitled "F.D. Supplement," issued by MELDRUMS, LTD., of Timperley, Manchester. No less than 19,000 of these furnaces have been fitted to various types of boilers all over the world.

THE STANTON IRONWORKS CO., of Nottingham, issue a monthly list of cast iron pipes in stock. The latest list covers straight spigot and socket pipes from 1½ in. to 48 in. in diameter, with a choice of weights, or turned and bored up 18 in., while straight flange pipes are available from 3 in. to 20 in.

IN addition to the second part of their general catalogue, referred to in THE CHEMICAL AGE of January 26, p. 91, A. GALLENKAMP AND CO., LTD., of 19 and 21, Sun Street, Finsbury Square, London, E.C.2, have recently issued a number of leaflets. These include a pamphlet (No. 83) which describes various apparatus required in the analysis of coal when making ash, moisture, or volatile-matter determinations, etc. First-aid Red Cross cabinets of various sizes are described in circular 242, and No. 208A is a pamphlet of museum jars, show jars, etc., for chemicals. A number of bargains are to be found in the firm's list of surplus glass laboratory apparatus. Any of these leaflets will be sent to readers on application.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, 51 and 52, Chancery Lane, W.C2, from whom further information may be obtained. Opposition to the registration of the following Trade Marks can be lodged up to May 30, 1924.

"SCALERIN"

446,360. For compositions for removing and preventing scale and corrosion in boilers. Henry Gans Scott, 8, Cecil Avenue, Barking, Essex; manufacturer. March 14, 1924.

"NONSYN"

446,448. For calcium carbide. Charles Henry Bingham, Junior, 34, Victoria Street, London, S.W.1; engineer. March 18, 1924.

"POSAVON"

446,804. For chemical substances used in manufactures, photography, or philosophical research and anti-corrosives. Chemische Fabrik Pott and Co. (a limited liability company organised under the laws of Germany), Priessmitzstrasse 39, Dresden, N., Germany; manufacturers. March 25, 1924.

"HUSKOIDS"

444,428. For chemical substances prepared for use in medicine and pharmacy. United Drug Company, Ltd., Rexall Building, Waterway Street, Nottingham; manufacturing chemists. January 14, 1924 (by consent).

"RACHETTE"

445,572. For chemical substances prepared for use in medicine and pharmacy. Tokalon, Ltd., 212 and 214, Great Portland Street, London, W.1; manufacturing chemists. February 21, 1924. (To be Associated, Section 24.)

446,591. For caustic soda, calcium carbonate of magnesia, being chemical substances for use in manufactures. The Salt Union, Ltd., Colonial House, Water Street, Liverpool, salt manufacturers. March 20, 1924. (To be Associated, Sect. 24.) Registration of this Trade Mark shall give no right to the exclusive use of the word "Union."

446,592. For calcium carbonate and carbonate of magnesia, being chemical substances prepared for use in medicine and pharmacy. The Salt Union, Ltd., Colonial House, Water Street, Liverpool, salt manufacturers. March 20, 1924. (To be Associated, Sect. 24.) Registration of this Trade Mark shall give no right to the exclusive use of the word "Union."

444,234. For veterinary medicines, sheep dips and disinfectants. Osmond and Son, Ltd., Standard Chemical Works, Doughty Road, Grimsby, manufacturing chemists. January 8, 1924. (To be Associated, Sect. 24.) (By consent.)

Westminster Bank, Ltd.

PROVISIONAL arrangements have been made for the absorption of Guernsey Commercial Banking Co., Ltd., by Westminster Bank Ltd., as from January 1 last, subject to Treasury sanction, and to the consent of the Guernsey Bank Shareholders in General Meeting. The arrangement between the two banks contemplates that the shareholders in Guernsey Commercial Banking Co., Ltd., will receive in exchange for their 8,000 shares of £25 each (£5 paid up) 48,000 £1 fully-paid shares of Westminster Bank Ltd. (being at the rate of six Westminster Bank shares for each Guernsey Bank share, with half-year's dividend to June 30, payable August 1 next), and, in addition, £160,000 (nominal) Inscribed 5 per cent. War Loan Stock 1929/47 (which is equivalent to £20 stock for each share held), carrying the half-year's interest due June 1. The present members of the Board of the Guernsey Bank will, after the amalgamation, act as the Local Board of the Westminster Bank, which will also continue to have the services of the present manager, sub-manager, and the staff. The Westminster Bank has been the London agent of the Guernsey Bank, and the arrangement, therefore, makes permanent a connection which has long existed.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgment

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

LONDON CHEMICAL WORKS, LTD, Scotts Road, Southall, chemists. (C.C., 3/5/24.) £26 16s. March 11.

PLEWS, Frank Henry, 36, Powis Square, Bayswater, manufacturing chemist. (C.C., 3/5/24.) £10 17s. March 13.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act, of 1908, provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

HODGE AND GOODMAN, LTD., Birmingham, paint manufacturers. (M., 3/5/24.) Registered April 12, charge to bank; charged on 8, Washington Street, Birmingham. *Nil. January 12, 1924.

ST. MARTIN PRESERVING CO., LTD., London, E.C. (M., 3/5/24.) Registered April 11, debenture to bank; general charge. *£8,500. January 14, 1923.

London Gazette

Winding Up Petition

LONDON CHEMICAL WORKS, LTD. (W.U.P., 3/5/24.) A petition for winding up has been presented by Henry Ellison, Ltd., Whitechapel, Cleckheaton, Yorks, manufacturing chemists, and is to be heard at the Royal Courts of Justice, Strand, London, on May 6.

Bankruptcy Information

NIXON, Ernest, trading as NIXON AND CO., 57, Bell Street, and 40, Henshaw Street, Oldham, and formerly trading as A. REDFERN, 14, Wellington Street, Oldham, wholesale druggist. (R.O., 3/5/24.) Receiving order, April 26. Debtor's petition.

Partnership Dissolved

BRINNINGTON CHEMICAL AND COLOUR CO. (Margaret BROOKS and Sam Slaney WILLIAMS), merchants of chemicals, dyes and colours, Brinnington House, Stockport, by mutual consent as from March 31, 1924. Debts received and paid by M. Brooks, who will continue the business.

SOLE (E. H.) AND CO. (Ernest Herbert SOLE and Ernest DALBY), ink and stain manufacturers, Rebbeck Road, Pokesdown, Bournemouth, as from April 16, 1924.

New Companies Registered

BARNES AND FAWNS, LTD., 317, Moorgate Station Chambers, Moorfields, London, E.C. The objects are to develop and turn to account any invention relating to the production, treatment, application, recovery or extraction of metals or metallic compounds, etc. Nominal capital, £11,000 in £1 shares (8,000 ordinary and 5,000 8 per cent. preference).

BRITISH AND FOREIGN LIME AND POWER CORPORATION, LTD., County Chambers, 66, Corporation Street, Birmingham. Chemical manufacturers and distillers, gas manufacturers and producers, etc. Nonimal capital, £8,000 in £1 shares.

CHAMPION PAINT CO., LTD., 37, Canning Street, Birkenhead. Manufacturers of and dealers in paints, paint brokers, manufacturers of lead and zinc paints, colours, varnishes and enamels, oil refiners, etc. Nominal capital, £1,500 in £1 shares.

CLOVER PAINT AND COMPOSITION CO., LTD. Manufacturers of and dealers in paints, oils, colours, varnishes, grease, tallow, soaps, tar and tar products, chemicals, etc. Nominal capital, £50,000 in £1 shares. Solicitors: J. D. Langton and Passmore, 57, Old Broad Street, London, E.C.2.

CONSOL PRODUCTS, LTD. Manufacturing chemists; manufacturers of and dealers in ice breaking machinery, refrigerating plant, carbonic acid gas or other gases and liquids of all kinds. Nominal capital, £20,000 in £1 shares. Solicitors: Wansey Stammers and Co., 52, Coleman Street, London, E.C.2.

GEORGE DUNCAN, LTD. Chemical manufacturers and dealers. Nominal capital, £1,000 in £1 shares. Solicitor: A. Wood, 630, Huddersfield Road, Ravensthorpe, Dewsbury.

C. H. HUFTON AND SONS, LTD., 47, Alcester Street, Birmingham. Manufacturers of emery and fluxes and dealers in drysaltery. Nominal capital, £4,000 in £1 shares (700 ordinary and 3,300 5 per cent. cumulative preference).

JAMES STODDART AND SON, LTD., 25, Market Street, Manchester. Manufacturers of and dealers in oil and greases, tallow, waxes, soaps, disinfectants, chemicals, colours, dyes, glue, etc. Nominal capital, £500 in £1 shares.

Report on German Industrial Conditions

THE Commercial Secretary at Berlin (Mr. J. W. F. Thelwall) has forwarded to the Department of Overseas Trade a review based on the monthly reports of the Prussian Chambers of Commerce of the trade and industry of Germany during March, in which he states that the economic situation continued to improve slowly. Everywhere an increase in production occurred, which was only interrupted now and again by partial strikes, and unemployment declined. Under the existing conditions, it appears that the profitable running of works in Occupied Territory is out of the question. Industry's demand for credit is growing. Reich, State and municipal taxes constitute a heavy burden on economic life. It is hoped that the gold discount bank will afford some relief in this respect.

With reference to the chemical industry, he states that according to the Görlitz Chamber of Commerce, the Höchst dye works had temporarily to contend with labour difficulties owing to the extension of working hours. In the chemical preparations industry neither inland nor foreign sales improved; the reason is to be sought in the shortage of funds possessed by German scientific institutions, while competition with foreign countries was, as before, rendered difficult in view of the high costs of production. In the cellulose industry, the Königsberg Chamber of Commerce report that ample inland as well as foreign orders were on hand.

A New Use for Sodium Peroxide

THE United States Department of the Interior, through the Bureau of Mines, has been experimenting with the use of sodium peroxide for the removal of paraffin from oil wells. From 100 to 200 lb. of the reagent are introduced into the well, either by dumping it in at the top or by putting it down in wire cloth, tin or glass containers. One or two barrels of water are also run in, if the well does not already contain water, as water is essential to the reaction. Although the experimental work is not yet complete the results of these preliminary experiments indicate favourable possibilities. Mid-Continent fields afford further encouragement in that the rates of production of several wells were increased from 50 to 100 per cent. by cleaning them out with sodium peroxide. Upon immersion in water sodium peroxide generates intense heat and liberates oxygen which supports combustion. Hydrogen and oxygen which are liberated through the decomposition of the water also burn. The paraffin is probably removed from the face of the oil sand both by melting and by burning. Sodium peroxide is dangerous in that it sets fire merely upon contact with water or damp objects. The use of this reagent would be especially dangerous around wooden derricks or other inflammable structures. In shipping and handling it extreme care must be taken to keep it from contact with water or inflammable substances that are moist.